The magazine for AUSTRALIAN radio amateurs

Amateur Radio

Volume 74 No 3
March 2006

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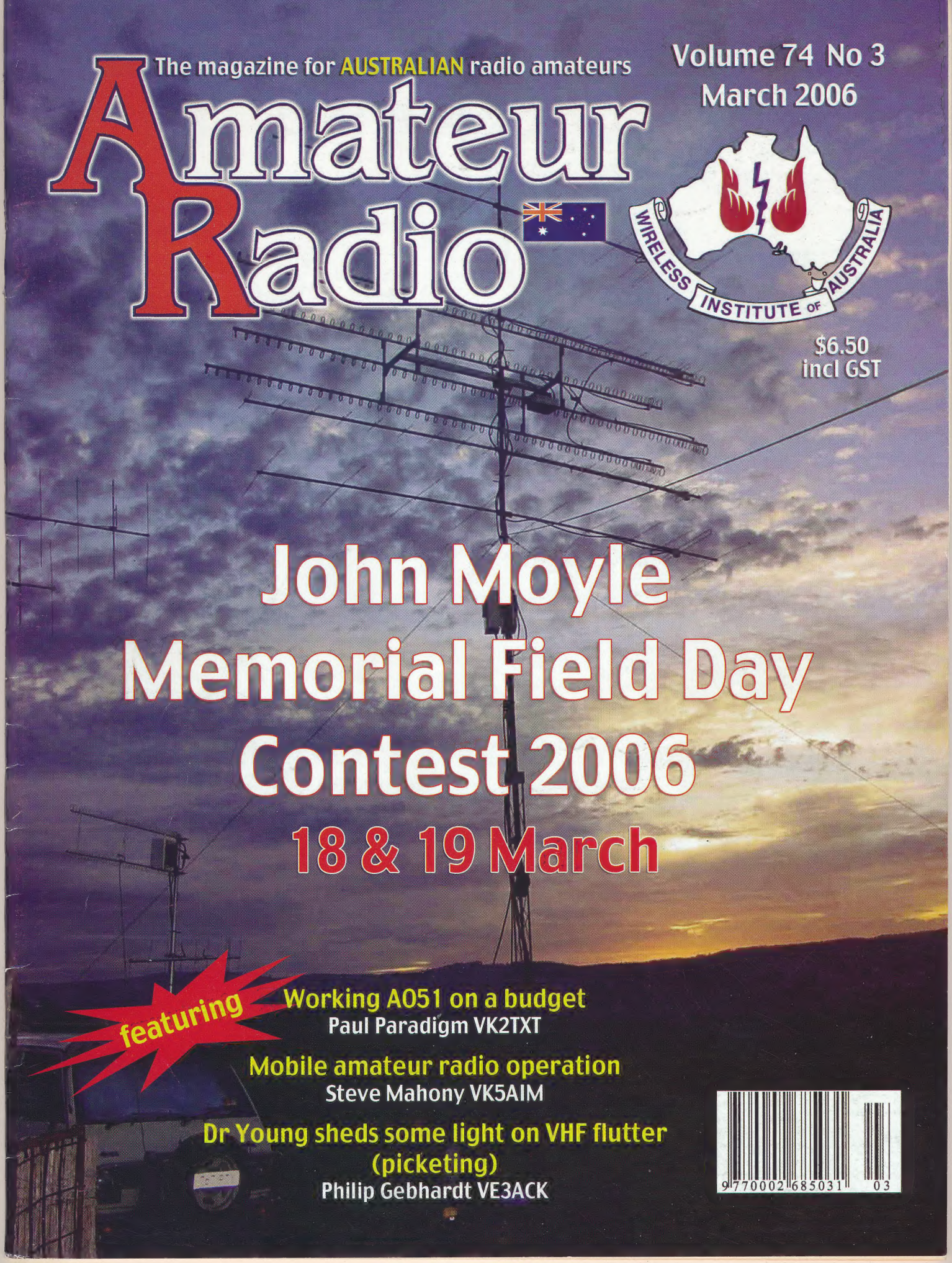

John Moyle Memorial Field Day Contest 2006

18 & 19 March

featuring

Working AO51 on a budget
Paul Paradigm VK2TXT

Mobile amateur radio operation
Steve Mahony VK5AIM

Dr Young sheds some light on VHF flutter (picketing)
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Our Cover this month

Our cover picture was taken by Doug Friend VK4OE of his recent Summer Field Day station/antennas just before dawn on Sunday morning. A reminder to prepare for the up-coming John Moyle Memorial Field Day on 18 and 19 March.

Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the National Office on receipt of a stamped self-addressed envelope.

Back Issues
Back issues are available directly from the WIA National Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

Photostat copies
When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Wireless Institute of Australia

The world's first and oldest National Radio Society
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The Australian Amateur Radio Service

Member of the
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Editorial comment

Peter Freeman VK3KAI

Interacting with newcomers

The new Foundation licensees are starting to become noticed on the bands. Those four-letter suffixes are unusual, but I am certain that we will all grow used to them.

As mentioned last month, many amateurs will be exploring what is for them new territory. Foundation licensees will be on the Amateur bands for the first time. Standard Licensees will be exploring new bands and modes. Some Advanced licensees may also explore new modes or bands.

How do we interact with newcomers? I have heard reports of someone (a long-standing Z call) coming up on the national call frequency on 144.1 MHz late in the afternoon. One of his locals came up and gave a response along the lines of "It is useless calling at this time of day. Try between 0800 and 0900, which is when all the activity occurs." The local then said that he had to go, having other things to do. It would be very easy for this newcomer to be put off by such a response. This should give us all reason to consider how we would respond. I am not implying that the local "regular" intended to "brush off" the newcomer. I suspect that he simply did not consider how his response may be interpreted. Perhaps, having come up to talk, even if only briefly, he should have been prepared to spend a few minutes to explain that the SSB end of the VHF & UHF bands can be very quiet for much of the day. If it were me, I would hope that I would have responded in such a manner, and then made a schedule to make contact with this newcomer at a time when we could both discuss the characteristics and typical activity patterns on this band segment. An unconsidered response, whilst well intentioned, might turn a newcomer away from the activity or even the hobby. Hopefully this particular newcomer will have, by now, made some contacts on 2 m SSB and will have learnt some of the operating habits of others.

Promoted as the largest amateur get together in VK, the Central Coast ARC Field Day was held at Wyong last weekend (as I write these notes). The day was warm and humid. It was good, as always, to catch up with amateurs that are usually just a voice on the airwaves or on the other end of the email system. It was also interesting chatting with many about the magazine, some offering contributions.

This month sees the running of the annual John Moyle Memorial Field Day. This contest is one of Australia's premier contests. I have taken a small liberty in promoting the contest on the front cover – the photograph is from the Summer Field Day. Thank you to Doug VK4OE for the picture. Here is a chance to test your preparedness for any possible emergency callout, or simply to get out onto a local hilltop to have some fun, or both. The rules were published last month and are available on the WIA web site. Note that there has been a revision in the distance/points scoring for 144 MHz and above. Locally, the club is planning to have a small group out running multi-operator all band, HF through to 10 GHz. Several newcomers to Field Day operation are expected. Now we must simply prepare and wait, hoping for good weather! Remember, the President's Cup is up for grabs for the station with the highest CW score.

Last month we published an article on a multi-band vertical antenna system. This has caused a bit of a stir – see an item in "Over to you". Recall that the author of the article said that many would question the system. We all need to remember that any antenna, regardless of its efficiency (or lack thereof), is much better than no antenna.

We finally see the conclusion to the story on aircraft enhanced propagation from Barry VK3BJM – sorry for the delay, Barry! Steve VK5AIM presents some useful options for the use of headsets by the mobile amateur. Paul VK2TXT gives us some hints on using AO51. From Canada we have a contribution explaining VHF flutter. Drew Diamond tells us one way in which we might reuse microwave oven transformers – please observe the warning notice!

That is all for now.

Cheers,

Peter VK3KAI

Michael Owen VK3KI

The WIA continues to evolve

This issue of Amateur Radio marks another significant step in the evolution of the Wireless Institute of Australia from a federally based organisation to a truly national membership organisation.

With this issue sent to members are the Notice of Annual General Meeting and the Institute's accounts, as well as some information about the Open Forum and the WIA Annual Dinner.

Isn't that all the same as last year? Yes, it is. The only difference between this year and last year is that last year many people were still members of a Division, and so their membership had not formally transferred to the WIA. They were "Provisional" members.

Now "Provisional" members no longer exist, and you are either a member or not a member.

However, this year and for the first time, with this issue are the documents for a postal ballot for directors. There is a reply paid envelope, an envelope for a ballot paper, the ballot paper and a statement from each candidate for election as a director.

The WIA has 7 directors, and each is appointed for two years, three retiring one year and four retiring the next year. The first directors were appointed by name in the new Constitution, when it was adopted by the then Federal Council, the representatives of each of the State or Territory divisions, really the annual general meeting of the only members of the WIA.

Some people wondered why there could not be an election at that time, to appoint the directors of the WIA with all of the members having a right to vote.

What was done was what is usually done when forming a new company, that is the subscribers, here the existing Divisions, choose the first directors, hopefully looking for acceptable people with synergistic skills. The change from the federal based structure to a national structure is so significant that it was very close indeed to forming a new company.

As you will recall, we were all members of a Division, and it was the Divisions that were the members of the WIA. That is another reason why it didn't make sense to have an election then, because it was only some months ago that the last of the people who were members of a Division became, if they wished, members of the WIA.

Now, the initial term of 3 of the directors appointed by the Constitution expires at the end of the next Annual General Meeting.

As noted in the December AR, clause 14.1 (c) of the WIA Constitution says, in part, that "The Board may determine that the election of Directors be conducted by postal ballot with the result of the election to be announced at the Annual General Meeting. A postal ballot shall be conducted in accordance with the regulations made by the Board from time to time."

In accordance with that provision, the WIA Board formally decided that the election of directors shall be conducted by postal ballot and after considering various comments made on the draft regulations it had published, adopted regulations to govern a postal ballot. A copy of the Election Regulations adopted by the Board has been placed on the WIA website.

The Board appointed David Wardlaw, VK3ADW, as Returning Officer to conduct the postal ballot, and David placed a notice in December AR calling for nominations.

The three retiring directors are eligible for re-election and each decided to nominate for re-election. In addition, there is a further nomination for election as a director, so there are four candidates for three positions and so there is an election and the election material I have referred to is enclosed with this issue of AR.

At a number of meetings I attended around the time the WIA was adopting its new, national Constitution, a number of people expressed strongly a conviction that the right to nominate and the right to vote was an essential aspect of a "new" WIA.

The WIA will be posting the voting papers and the Notice of Annual General Meeting to all members who don't receive AR, such as "Family Members".

So, for the first time, all members have an equal say in the election of directors.

Each candidate is allowed 250 words to provide "biographical details or other information as the candidate wishes" and so the election material includes a statement from each candidate.

So now is the time for everyone to vote. Don't leave it to others. Exercise the right you now have. Read the instructions on the voting paper carefully. Make sure that your vote is cast in the time allowed, which is short. If your vote gets there after 27 March, it will be disregarded.

So now is the time for everyone to vote. Don't leave it to others. Exercise the right you now have.

If I may conclude by referring to the Annual General Meeting, which will be held in Sydney on 6 May 2006.

As you will see from the Notice calling the Annual General Meeting, the Board has decided that it will conduct an Open Forum, as was conducted last year.

Quite apart from your right to vote, please do consider attending the AGM and Open Forum, and hopefully the Dinner, and find out what your Institute is doing, meet some friends and offer your suggestions for the future.

ar

WIA News

ACMA Policy – Practical assessment

The WIA has addressed the concern raised by a number of members in relation to the ACMA policy about when it was necessary to undertake a practical assessment.

WIA President Michael Owen, VK3KI, has written to ACMA setting out this concern, and in particular, suggesting that the policy was considered unclear in circumstances where persons holding qualifications obtained under the previous licensing and certification arrangements were only now applying for a licence.

Alan Jordan, of the Pricing and Policy Branch of the Australian Communications and Media Authority, has advised the WIA that Amateur qualifications obtained before the new licensing arrangements came into force in October 2005 continue to be fully recognised.

Persons holding an AOCP or AOLCP will be granted an Advanced Licence without having to undergo a practical assessment. Similarly, persons holding an NAOCP or NLAOCP will be granted a Standard Licence without having to undergo a practical assessment.

More information can be found on the ACMA website.

WIA Board meets

The WIA Board met in Sydney on 17 and 18 February 2006 and most of the directors travelled to the Wyong Field Day on Sunday the 19th and manned the WIA stand.

Among the matters discussed by the Board were:

It was confirmed that the 2006 Annual General Meeting and Open Forum would be held in the Bankstown RSL in South Western Sydney on 6 May 2006. The WIA Annual Dinner will also be held at the same venue that evening. More details will be released shortly.

The Board reviewed the Intruder Watch program and was pleased to note some modest wins, including the removal of certain radar interference and a commercial data network on the 40-metre band.

BPL was discussed and the Board reaffirmed the WIA's position. The WIA will continue to monitor developments and take whatever steps it can to ensure the issue of interference is addressed.

Progress with the Foundation licence, the accreditation of assessors, the WIA Exam Service and the likely need for a second print of the Foundation Licence Manual were reviewed. The Board agreed to increase the resources of the WIA office to improve the turnaround time for processing exam results. The Board agreed to proceed with the next round of assessor training.

The Board discussed the progress of the WIA Bookshop, WIA publications, broadcasts and the WIA website.

The Board reviewed the WIA's involvement in the International Amateur Radio Union Region 3 and the forthcoming conference to be held later this year in India.

The Board reviewed the accounts for 2005, and adopted a budget for the current financial year ending 31 December 2006.

The Board decided to proceed with the Club Grants scheme foreshadowed last year, and details will be published shortly.

The Board decided to conduct a series of Club Conferences in various states, to ensure that the WIA had the benefit of grass root opinion and that clubs were properly informed on WIA activities.

In addition to its face to face meetings, the directors are in continuous contact and as is noted in the Directors' formal Report to the Annual General Meeting, the directors communicated regularly by email and phone. During the 2005 year 98 resolutions pursuant to the Constitution were signed by all directors. These dealt with the admission of new members (46 resolutions), the affiliation of clubs (36 resolutions), and the balance (16 resolutions) dealing with various matters from banking to the adoption of regulations to govern postal ballot.

Foundation licensees to be allowed transmitter power of 10 watts all permitted modes

As the new amateur licence structure, including the Foundation licence, came into effect on 19 October 2005, WIA President Michael Owen, VK3KI, said that "Our only regret is that we believe that the power limit of 3 watts for AM, FM and CW for the Foundation licence, while perfectly logical, is unrealistic given the output power of commercially available equipment, particularly older equipment, and that the power limit should be 10 watts."

Michael had already advised ACMA that the WIA believed that a power output limit of 10 watts would not result in any difficulties but would enable the use of many older transmitters, particularly VHF transmitters, which would be attractive to the Foundation licensees.

The WIA has been advised by ACMA that "Following reconsideration of the issues involved, it is agreed, under the Foundation licence, to permit a transmitter output power of 10 Watts pX on all permitted emission modes instead of the present 10 Watts pX for J3E emissions and 3 Watts pY for all other permitted emissions."

The change will formally come into effect with the other amendments to the Amateur LCD in some months' time.

continued on page 7

Plan ahead

PORT MACQUARIE FIELD DAYS

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Experiments in aircraft enhanced propagation

(Part 2)

Barry Miller VK3BJM

In November I detailed the beginnings of my experiments in Aircraft Enhanced Propagation (AEP), on 144 and 432 MHz, from the far west of NSW. This month I'll explain how subsequent trips explored the question of how far west this mode of propagation can be relied upon.

Trip Number 3 – November 2003

In mid-November 2003 I headed up to a spot just south of White Cliffs, to continue exploring how far north and west the AEP would support communications. This trip would activate QF19ma, and challenge my portable VHF/UHF station. From the location just west of the Wilcannia-White Cliffs Road, my GPS told me it was 811 km to Sydney, and 789 km to Melbourne. This is getting right on the theoretical limit for this mode of propagation.

I spent nearly three days on the treeless ridge in 40°C heat, drinking lots of water and hiding in the shade. I failed – just – to work back into Melbourne. The beam heading was nearly at right angles to the Sydney-Adelaide aircraft track, which meant the aircraft provided propagation for a very brief period. The two near-contacts that I had suggested that it might just be possible to work into Melbourne, but the report exchange process would have to be perfect to be completed in time.

It was a different matter towards Sydney, though...

I had managed to park myself almost directly underneath the G222 flight path – it runs between Sydney and Djakarta. Not only did this mean I was woken up at about 0600 AEDT each morning by a 747-400 passing overhead towards Sydney, it also meant I had a reference from which to time my calls to Sydney. There was also the A576 route visible a little to the north of me, running between Bali and Sydney via Alice Springs.

G222 was the key, though, as it was used by Boeing 747-400s at high altitude. The higher the aircraft, the further over the horizon your signal will be propagated. It also seems that the bigger the aircraft, the better the propagation.

Through bad luck and bad timing, I didn't complete with any Sydney stations on the first two mornings. But on the third – Monday 17th – I concentrated on Sydney, and at 2118 Z I completed with Gordon VK2ZAB on 2 m – a report of 51 given in return for a 52. Three minutes later, we completed on 70 cm with the same reports. There was much whoopin' and a-hollerin', at my end at least... Twenty minutes later I repeated the contact on 2 m with Gordon, except this time Gordon was 56, and he gave me a 53, peaking to 54.

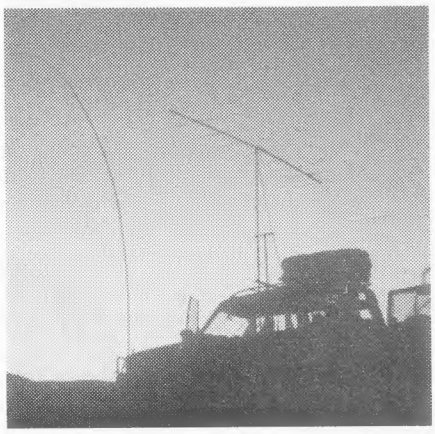
I think it was around 2200 Z that I spoke with Guy VK2KU on 40 m, and I agreed to leave my CW keyer running for half an hour for him to monitor with "Spectran" (a PC-based audio spectrum analysis program). At about 2235 Z we were discussing giving up as nothing much had been seen, when I heard something big and Boeing overhead. I suggested we give it another half hour!

Eventually my beacon signal started to become visible on "Spectran" and built in level until voice was viable. Finally, at 2313 Z, I worked Guy on 2 m. I gave him a report of 51, and received a 41. Signal strength seemed to be still building as we 73ed.

Trip Number 4 – April 2004

On arriving home, I got out my maps, and flight charts, and started calculating. I wanted to see if the 900 km barrier could be broken. The best way to achieve this was to plot a beam heading from Sydney, getting it to intersect the G222 flight path at a distance of 450 km or more (from Sydney). I came up with two initial possibilities: Mt Dering QF08tm, or near Nundooka Homestead QF09ud. A little more work suggested a spot 100 km north of Broken Hill, near Fowlers Gap QF08uv, might be better. All three locations are along the Silver City Highway, north of Broken Hill.

While I wanted to get back on the road as soon as possible, I decided I'd wait until the ambient temperature level dropped to something a little saner than



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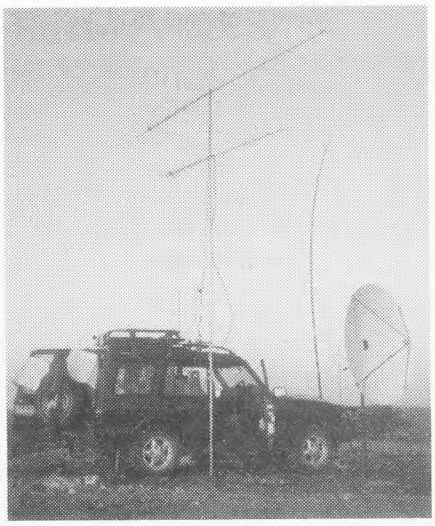

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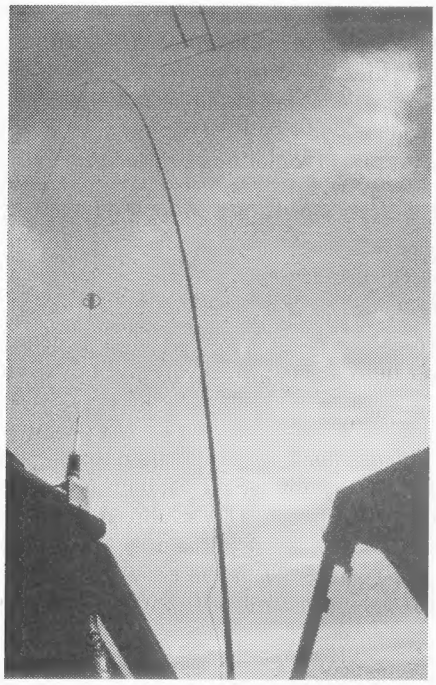


White Cliffs Nov 2003

40°C. This translated to mid-April 2004.

On Friday 2nd of April I left Kyneton for Fowlers Gap, arriving there just before midday the next day. With some much appreciated assistance from David of the University of NSW (the UNSW owns Fowlers Gap station), I set up adjacent to a trig marker on the highest part (283m ASL) of a nearby ridge. The view from the ridge alone was worth the drive from home!

The first signal I looked for was the Ch5A vision carrier from Newcastle. It was immediately audible, and every now and then I heard the distinctive flutter of multi-path caused by an aircraft in the path. I ran the keyer towards Sydney, and it was heard by VK2ZAB almost continuously – but not at a level that would support voice. I could hear Gordon calling me most of the time, too, at RS of 41. This was the benefit of my low local noise floor, combined with his larger transmitter power. These signal levels appeared to be a result of inland tropospheric ducting (this view was strengthened by contacts with Leigh VK2KRR and Mark VK2EMA – both had constant large signals from their QTHs in central NSW). We agreed that all we needed was an aircraft suitably placed to enable the contact to be made.

I'd believed that my position should have afforded me a view of aircraft passing on the G222 route, but I only saw one during my entire two days on the ridge. Based on my experience from the previous two trips, I asked Gordon to be available from 0500 AEST, to coincide with the morning flights I had observed. On this trip, it was dark at that time of the morning and I saw no aircraft.

Sunday morning we had two near contacts, but the enhancement was marginal – the first attempt had a report copied incorrectly, and the second fell through before confirmations were fully exchanged. Monday morning we succeeded twice (one contact showing marked aircraft flutter on Gordon's signal), with a third near contact. We tried 70 cm, too; but I heard nothing from Gordon, though he thought he heard something from me. The path distance, according to my GPS, was 923 km.

Contacts were also made into the Melbourne area (VK3AFW at a distance of 813 km, and VK3II at 882 km), Canberra (VK1DO at a distance of 860 km) and with VK5s ZK and UBC, at Goolwa and Gawler respectively.

Station details

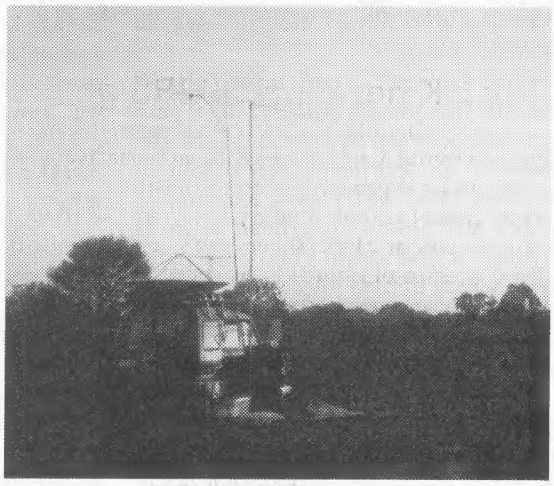
I'd class my portable station as modest – not QRP, but there is certainly room for improvement in most areas. All the contacts detailed in this article have been made with the following gear.

Transceiver: Icom IC-706MkIIG

2m: Mirage 160 W PA, with inbuilt 21dB pre-amp (manufacturer claimed 0.6dB noise figure), and home-brew 10-element DL6WU-style Yagi at five metres above ground level.

70 cm: RFC 100 W PA, with inbuilt 12

Wilcannia 17.11.02



Wilcannia 18.11.02

dB pre-amp (2 to 3 dB noise figure) and home-brew 15-element DL6WU-style Yagi at four metres above ground level.

I've variously used RG213, 9913 and LMR-400 coax on all trips except the Fowlers Gap expedition, where I used six metre lengths of LDF 4-50 Heliax for both bands.

I feel that I can do much better on 70 cm by building a bigger Yagi (possibly 28 elements) and adding a better pre-amp (more gain and better noise figure). On 2 m I need more grunt. I'm building a 14-element Yagi for 2 m, and looking at a design for a 19-element version. It would be nice to obtain a 300 W solid state PA – but they're rare and cost kilo-bucks!

I use a CW keyer (the RAJE design kit) as a beacon, to save my voice. It automatically runs a simple sequence – "CQ de VK3BJM K" followed by 10 seconds of receive before repeating the call. During the receive break I listen intently for replies – if one is heard the keyer is disabled and I reply with voice. This also helps maximize the life of the battery, which in my car is an auxiliary 120 Ah deep cycle battery.

Conclusion

The western half of NSW has very few active amateurs on VHF and UHF, and this might add to the impression that VHF and UHF is a dead loss in this remote part of Australia. In fact, the type and altitude of the aircraft flying over NSW will provide some of the best long distance Aircraft Enhanced Propagation around. Time, patience, and a little research are all that is required to exploit this.

My choice now is this: attempt to exceed the 1,000 km barrier for an AEP contact, by going 80 km west of Fowlers Gap, or settle for activating other locations in NSW within a 900 km radius of Sydney. I want to try for the 1000 km contact, but I won't attempt this till I have improved my portable station. Stay tuned – preferably on 144.100 MHz.

Finally, I'd like to thank the many stations whose support, encouragement and participation have made these contacts possible; but especially Chris Morley VK3KME and Peter Freeman VK3KAI for assistance in research, and Ron Cook VK3AFW and Gordon McDonald VK2ZAB for their support with both research and on-air availability.

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WIA News *continued*

The WIA President said that the WIA welcomed ACMA's decision, which should assist many Foundation licensees, and was grateful that the regulator was prepared to make an early announcement.

ACMA responds on single letter suffix callsign proposal

ACMA has responded to the WIA's proposal for the issue of single letter suffix callsigns to Australian amateurs.

"We received 45 replies to our request for comment on single letter suffix callsigns" WIA Director, Glenn Dunstan, VK4DU, said.

"Of these replies, 38 were in favour, and 7 against."

"In light of this small response, and in consideration of the administrative overhead required, ACMA have advised that they will not be issuing single letter suffix callsigns to amateurs for the present time" Glenn said.

The WIA wishes to thank all who replied to its call for comment.

The UK news on GB2RS goes digital

Last December RSGB newsreaders were informed that some experimental GB2RS news broadcasts were planned for 2006 using digital voice transmissions. The first of these experiments is due to take place from GX0BAA on Sunday 12 February at 2115UTC on 1992 kHz using USB WinDRM, the successor of HamDREAM software

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WANTED

Articles for Amateur Radio

Technical, club activities, DXpeditions, Field Days, opinion, or whatever your experience is or has been in amateur radio

Address for submitting articles can be found on page 1

Silent keys

Horace (Horrie) Stephens VK2ZES

Horrie passed away peacefully at Nimbin Hospital, 16 January, 2006. Aged 91 years, he had been deteriorating in recent months with cancer. He was a foundation member of SARC since it formed in 1959. He was well-known and popular throughout the region. He came through the motor trade into radio and TV servicing. Very knowledgeable, he was always willing to help anyone. His funeral was held at Lismore Crematorium Chapel. On Thursday 19th, almost 200 people attended to see him off. Many SARC members were present. Our condolences to his wife Jean, his family and friends. Vale Horrie VK2ZES.

Henry David Russell VK2BSC

of Mount Hutton

David had recently joined Hunter Region WICEN. He spent some of his early working years in the broadcast industry in Sydney before returning to Newcastle. David was an 80 metre relay station for the VK2AWX Monday evening news session when Rodney VK2CN was not available.

Vale David VK2BSC

VK2NN

(extracted from WICEN news)

Jack Wilson VK2XK

Jack Wilson VK2XK became a silent key on 24th January.

Jack was first licensed in 1948 and operated from his home in Gymea.

Advised by his son.

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HF and VHF Transceivers, Autotuners and Kits

Phone 03 5977 4808. Fax 03 5977 4801 info@ttssystems.com.au

LDG FT-Meter —

Plug and play, easy-read piggyback meter puts needle bounce in your voice peaks

Yaesu's popular FT-857 and FT-897 transceivers are wonders of compactness. These do-anything, go-anywhere transceivers were science fiction just a few years ago, but amateurs today are using them everywhere

About the only problem with these radios is that we amateurs with a few miles on the eyes wish that the display was just little bit bigger. Those tiny little screens are just plain hard to read!

And we like to see a real live meter needle bouncing on voice peaks, Wish they had thought of that when they designed the radio.

Well, in fact they did.

Noticed only by compulsive manual readers, is is news that there is a meter jack on the bottom of the front panel. Yaesu probably knew they needed a bigger display all along, but just left it as an exercise for the user. Well, help is here! The LDG FT-Meter is a low-cost, plug-and-play solution to all your FT metering needs.

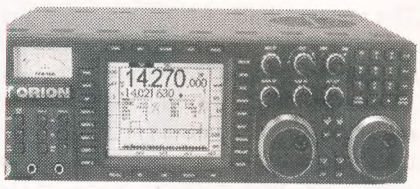
The FT-Meter presents a lush, highly readable 2.5" meter face with calibrated scales for signal strength and discriminator reading on receive, and power output, SWR, modulation, ALC action and supply voltage on transmit.

Each function is selectable from the radio's menu. Easily visible from anywhere on your desk or dash, the FT-Meter is illuminated by any external 12 vdc source. The FT-Meter comes fully assembled and ready to go; just plug it into the radio and you're in the picture like never before. Order yours today.

We have SGC

SGC 237 Waterproof Auto Tuners
SGC 239 Economy Auto Tuners

Autek Antenna Analysers
Autek RF 2kW in-line Power meters
Vantage Pro Weather Stations



ORION II—It's new

Super bright, TFT color display, CCFL backlighting. New 32-bit control processor using the latest generation Freescale DragonBall Super VZ chip.

Faster front panel control response and accelerated remote operation via RS-232. "HIGH SPEED SWEEP" add-on-able. All-new firmware . DSP code is refined, crafted and compacted to levels unimaginable even two years ago. Provides faster (stock) sweep with finer resolution, enhanced DSP automatic notch and DSP noise reduction.

ORION II-specific roofing filters iare arranged in a single bank to allow selection of the absolute ideal roofing filter for you. The narrow (600 and 300 Hz) filters are inwith all the rest, giving subtle improvement in dynamic range. The new filters have less passband ripple than ever offered.

ORION II comes standard with 20, 6, 2.4, and 1 kHz installed. Now more affordable optional filters are 1.8 kHz (model 2000), 600 Hz (model 2001), 300 Hz (model 2002). Mixing architecture for analog stages has been re-arranged to give self-correction for frequency stability.

Variable (programmable) line level output on rear panel completely independent of front panel controls.

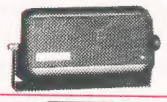
ORION II uses the popular 8 pin mic connector broadening the range of mikes and accessories readily available without finding or making adaptors.

MAC-200 MASTER ANTENNA CONTROLLER (Smartuner Built-In)

Control up to 5 Antennas

Select the right antenna, for right band, at right time. The Master Antenna Controller is your base station control center, no switching and tuning. You select from five antennas and automatically get minimum SWR. Monitor your power and SWR. With MAC-200 you control your antennas.

ADSP SPEAKER



Three modes:
•no noise reduction; original ADSP; new ADSP2 noise reduction –up to 26 dB of noise reduction .

LDG ELECTRONICS

Z100 TUNER & AT1000 HIGH POWER AUTO TUNER

TEN-TEC KITS

Ten-Tec 3003 Acro-Bat antenna hanger.

UV resistant, S/S hardware. Hang ladder line-fed or small gauge RG-58 or RG8X coax-fed wire antenna.

Model 516 Argonaut V IF-DSP QRP Transceiver

IF-DSP, modern 20 watt HF transceiver. 20 watts output power, all modes. SSB, CW, digital modes, and FM. Front panel adjust 1-20 watts output. AM operation at 5 watts carrier power (20 watts PEP). Metering measures forward or reflected power in switchable 2 or 20 watt scales.

LDG's DTS-4 Desktop Coaxial Switch

Switching between antennas no longer requires under-desk acrobatics to connect up, but coax switches often take up scarce desk space.

And if lightning strikes, "Did I set the switch to Ground?" If not, do you now own a pile of rubble.

With LDG DTS-4 Desktop Coaxial Switch you can instantly switch your rig between 4 antennas with the press of a button. All five coax sockets (4 in,1 out) are on the back, . The DTS-4 will fit in just about anywhere on your desk. A bright red LED indicates the antenna in use. Touch a button and all inputs are grounded. Remember that lightning strike when you are out? The DTS-4 can sense when your rig is off, and automatically ground all antenna inputs and you start up again on the last used antenna.

Using a compact remote control box (DTS-4R) you can remote-mount the DTS-4, the desktopper has all the features but only a single, slim control cable running to the remote DTS-4 switch. 1500 watts of RF power on HF (1000W on 6M), it can be used with any coax-fed antenna. If the power supply fails, it grounds all inputs.

Six position version available

The very informative DTS
4 front
Highly organised back

SG-237 Smartuner™

High density surface mount components in a 4 layer PCB on chassis: high efficiency, reliability, performance, excellent electrical and RF ground system. Weather resistant, factory-sealed ABS plastic.

MULTIPLE APPLICATIONS -- Use for base, mobile, portable, marine or aviation. Rugged and small gives max. flexibility. 100W power, coverage to 60MHz, matches most popular HF transceivers. Use balanced or unbalanced antenna: whips, backstays, dipoles, loops and longwires, only 28 feet of antenna for full coverage operation.

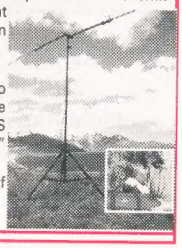
Full info available—ask

BUDDIPOLE

Dipole — vertical... Fits in travel bag! Optimised for transmit power, proven for DX work. Ultra light materials, High-Q coils. Zero-loss balun with Quick-Connect feedpoint.

Standard Comes with—

- Two 22" black aluminium arms. Two multi-band coils (40- 10m), adjustable coil tap pre-marked system • Two SS telescopic whips, VersaTee™ w 3/8" x 24 adaptors
- BNC/PL259 coax connector, 25' of RG58 coax
- Carry bag



Full-wave half-square antenna

Lindsay Collins VK2YN

Amateur Radio has published lots of information on antennas lately, but I would like to show another one which I have used a lot here, and in Darwin when we visited our two daughters. I have one now on 18 MHz.

If anyone has room for a dipole up to 25 feet, more or less on any frequency you want, then I can recommend the full-wave half-square to you now. It is quoted as giving 4 dB gain and radiates at right angles, the same as all dipoles.

As shown in Figure 1, the antenna comprises a vertical quarter-wave leg on one side of the feed-point, with a three-quarter-wave leg on the other. Of the latter, the first half-wave runs horizontally from the feed-point and the remaining quarter-wave hangs vertically down. A stabilising mass at the bottom of each vertical section keeps these wires taut.

The overall assembly is supported by a rope at each end, using suitable insulators. Each rope should run over a pulley at the support point so that it can be paid out or hauled back to adjust the antenna height, whilst at the same time keeping the half-wave section essentially horizontal. This is the method used to vary the feed-point impedance so that it matches that of the 50 ohm coax feeder.

The feed-point should ideally be installed near the shack so that the coax can be tied for at least six feet along the horizontal support rope, between the feed-point and the full-circle pulley rope at that end. The coax is also tied to the vertical rope so that it is kept well clear of the quarter-wave leg of the antenna which hangs down from the feed-point.

At the feed-point, a small slab of plastic (around 6 mm thick) can be used to mount a SO239 socket which connects the feeder to the antenna. The centre pin of the socket is connected to the long leg of the antenna and the metal body to the short leg. To do away with insulators, the two antenna legs and the support rope can be mechanically anchored to holes in this plastic piece.

For weatherproofing, wrap the plastic slab and socket assembly in black plastic sheet (from a garbage bag) and seal it up with black insulating tape.

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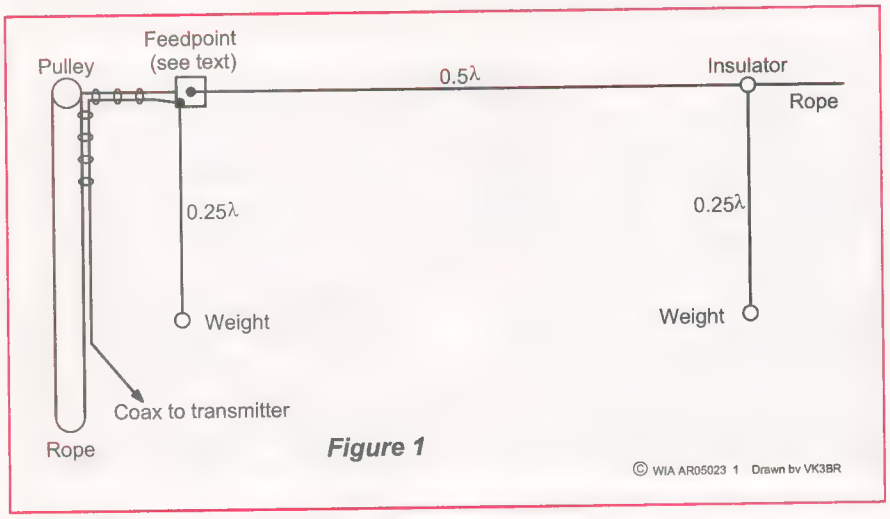
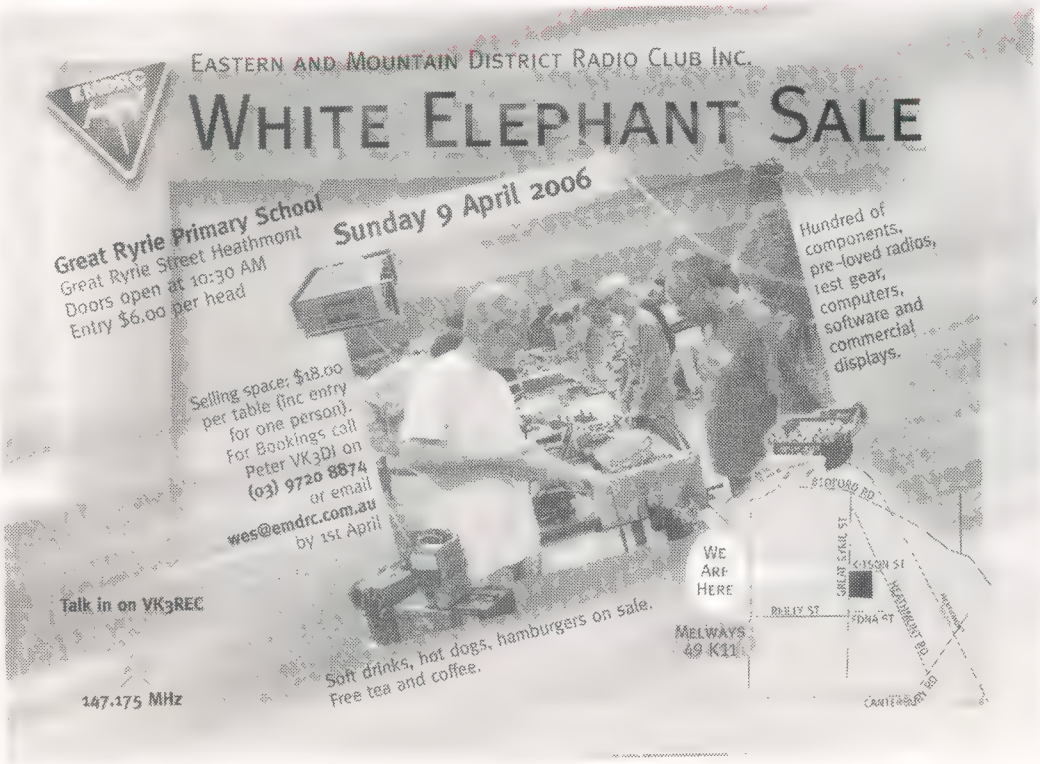


Figure 1

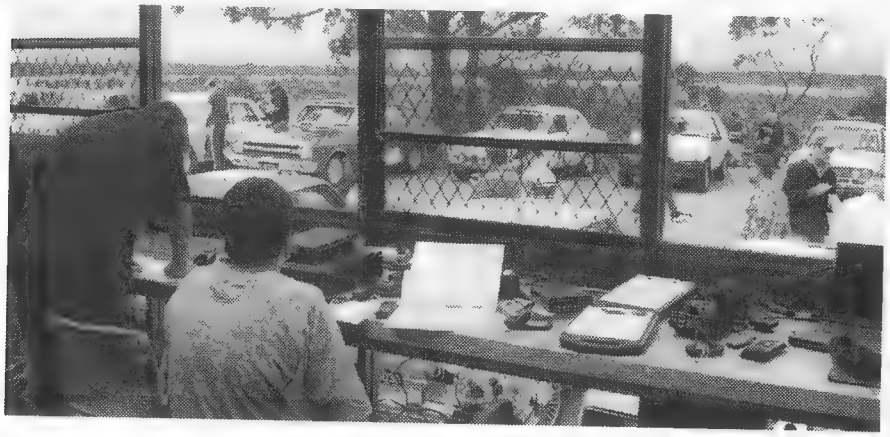


Amateur radio involved in Alpine Car Rally

Rob Ashlin VK3EK

Amateur radio under its banner of WICEN (Wireless Institute Civil Emergency Network) was used extensively around the mountains of East Gippsland on the weekend of 4th and 5th December 2005 supporting the Historic Alpine Car Rally. WICEN operators were involved from control Headquarters at Lakes Entrance on Saturday morning to the finish line near Bruthen on Sunday afternoon. Amateur Radio operators from East Gippsland Radio Group, as well as a lot of support from other radio operators from various Clubs and groups that are WICEN members across Victoria, took part.

The job at hand was to report start and finish information into Rally Headquarters when a car had started in a section, and the radio operator at the end of that section would in turn report when a car by number had finished that section. This supplied all the necessary details to the officials and support crews of each car as to where it was placed. With cross reference checking at Rally control, each car was accounted for as to its whereabouts. In the case of break downs or rollovers, the safety and well being of the drivers could be tracked very quickly.



WICEN base at rally HQ

Peter VK3NPI operating the VK3EK portable setup at a rally checkpoint.

With around 80 cars in the rally and 19 sections covering the landscape from Lakes Entrance to Bell Bird, Buchan, Ensay and back to Lakes Entrance, this took a lot of organization and man hours by operators. Saturday operators began on check points from 9.00am and finished at 4.00am on the Sunday morning. Some operators camped overnight Saturday on-site and ran another stage checkpoint on Sunday. The main communications were done on 2 metres via FM repeaters; some repeaters are located in their permanent locations of Mt Nowa Nowa and Mt Bemm, while other portable repeaters were specifically set up just for the event on Mt Buck and Pheasants Hill. HF communications were also used as back up. For this type of event, Amateur Radio operators supply their time and portable radio gear on a voluntary basis, using the activity as training in the case of a disaster in the area. This type of operation is certainly not unique to Australia; with the hurricanes recently in New Orleans and the tsunami in Asia, amateur radio provided a lot of the communications to the disaster affected areas. Anyone wanting to find out more about amateur radio in East Gippsland can have a look at the group website at www.vk3eg.org

The amateur-radio-friendly vineyard

A tale of two amateurs in a vineyard and the 160 m Trans Tasman Contest

Vince Henderson VK7VH

Do you know anyone that has operated an amateur station at a vineyard? Did I just hear you say, "why would you want to"? Well this is the story of two hams that said, "why not, what a great idea, lets have some fun".

Ray Smith VK7NRS, and yours truly Vince Henderson VK7VH, spent a great weekend with our sons on Bruny Island during April this year. Besides the fishing, swimming and beach cricket, we found a little time to operate a portable station.

Bruny Island is situated some 20 km down river from Hobart. Not only is Bruny Island a spectacular location, we found it very suitable for radio. Although there are a number of accommodation options, we wanted something a little different, at a price that would not break the bank, and the ability to do our own thing, especially the chance to have a play with radio.

A check of the Internet revealed such a place. Our weekend away was at Wayaree Estate, one of Tasmania's most southern vineyards. The property was a large farming operation until 1998 when the land was purchased by Bernice and Richard Woolley. They saw the potential for grape vines and Wayaree Estate Vineyard was born. It is now well established, and produces quality Pinot Noir and Chardonnay wines.

The original farmhouse was converted into a fully self-contained accommodation cottage. It is one of those special places that leave a memorable impression.

During our first sojourn to Wayaree Estate we asked Bernice and Richard if we could erect a wire antenna by throwing a line over the 70 foot tree that was at the rear of the cottage. "No problem", was the immediate answer. Within no time at all we were up and running with an 80 m dipole. There was no sign of the ever-present noise levels that I normally experience at home. The bands were quiet and the dipole worked very well, especially on 80 m where everyone said that our signal was outstanding.

We had such a great time that a return visit seemed inevitable. Our thoughts turned to antennas. "What about doing something different?" we seemed to say in unison. Ray and I agreed that this would be the location to have a go at the 160 m Trans Tasman Contest. Talk soon turned to excitement as we realised that, with the acres and acres of room and the huge number of high gum trees, an antenna of major proportions might be possible.

It was time to put the question to Bernice and Richard. "Could we come back in July and set up a radio station and some big antennas?" Once again our hosts said yes. In fact, they said that we were more than welcome to put up whatever we wanted and use any of the trees as mounting points. Not only were they great hosts, they were amateur radio friendly.

Putting together a mini island DXpedition is no easy task. However, when the location is nothing short of magnificent, and putting up a serious antenna for 160 metres is the driving forces, it becomes easy. We would enter the 160 m Trans Tasman Contest as a club station, using VK7CHT, the call sign of the Central Highlands Amateur Radio Club of Tasmania.

We decided to build two antennas, a 160 m dipole and a resonant three-half-wave 160 m long wire. The long wire would be nearly 800 feet in length

Photo 1 - The two DXpeditioners running the long wire from the feed-point to its termination way over there somewhere!

Photo 2 - The cottage at Wayaree Estate on Bruny Island. The feed lines for the dipole and the long wire can be seen disappearing into that magnificent antenna support

and would require some serious anchor points. However, this was not a problem; the trees on the bottom boundary would be ideal and some were at least 90 feet high. We decided to feed the long wire a quarter wave from one end as this would allow us to have the feed point mounted in the gum tree near the cottage.

The main reason for building the long wire was to get some gain (almost 2 db) and a lobe that would favour New Zealand. This would increase our chances of accumulating good points from contacts into 'Kiwi land'. If the radiation pattern stayed true to theory we could expect a good lobe into ZL. The dipole would suffice for all other directions.

After many weeks of preparation, the weekend of the 8th July was finally upon us.

We caught the Bruny Island ferry and, after a quick trip across the water, just a few kilometres, we drove to Wayaree Estate arriving at noon. We were fortunate to have Ray's son Kiel accompany us for the weekend. A third pair of hands would prove invaluable. Thank you Kiel for your help. We immediately commenced putting up the 160 m dipole, which took no time. The 800 feet long wire was a different story.

The job of measuring out the wire, and joining where necessary, took many hours. A point we will remember for the future, as prefabricating as much as possible before the event would have saved a great deal of time. The feed point for the long wire was hoisted into the big gum tree at the rear of the cottage just as the sun disappeared into the west. We just ran out of time! Mounting the ends of the long wire would have to wait until morning. At least we had the dipole in operation and we could test it out that night.

We found the dipole tuned easily on 160 m and, even though the SWR was 1.4 to 1, (which is what we expected at resonance), we decided to use the antenna coupler as my solid state TS 440s appreciates a little better match to keep the finals happy. We tuned up the 160 m dipole on 80 m and immediately found that it worked like a dream. Contact with the regular 5.00 pm 'sewing circle' net (or is that the knitting group - I am going to be in trouble for writing that!) on 3.590 MHz confirmed that all seemed OK as the signal reports varied from big to "I need a new needle for my S meter".

We had arranged a sched at 8.00 pm on 160 m. Our contacts proved that the dipole was working very well. We received great signal reports from VK7, VK3, VK2 and ZL. Most suggested that we should be very competitive in the contest. It was disappointing that we just ran out of time to get the long wire operational, as testing into ZL would have given us some indication of performance and allow changes to be made on Saturday. We knew that we would be flying blind with the long wire on Saturday night and, whatever the outcome, we would be stuck with it.

As Friday night passed, we also passed out near midnight and 'hit the hay'. Up again early Saturday morning, we launched ourselves into getting the long wire operational. After many casts of the surf rod into the trees, we finally had the support points and associated pulleys in place. The long wire (now affectionately know as "the antenna from hell") went up and the majority of the antenna was at least 90 feet high. To our surprise there was nowhere near the sag that we had expected.

Photo 3 - Vince at the portable station – Ready to Go!!

Theory suggested that the feed point impedance should be around 110 ohms, given no reactance and little ground effects. We measured the SWR at resonance and found it to be close to what we expected, 2.4 to 1. The antenna coupler was pressed into service and, although tuning was a little fiddly, we eventually had the SWR down to an acceptable level. We then tried out the long wire on some other bands and found it to work well. Getting a test report on 160 m would have to wait until nightfall.

A little before 5.00 pm we sat down to a traditional roast lamb dinner and the obligatory glass of red wine. It was a welcome restful meal after the events of the previous two days. Earlier in the afternoon we had fired up the computer contest program and ensured that all was working as it should. We also set up a coax switch to quickly change between the dipole and the long wire. All was ready for the contest start time of 6.00 pm.

Twenty minutes before the contest, we tried out the long wire and found that it had a slight advantage into ZL. The reported signal strength was marginally better than the dipole. However, the long wire was quieter and ZL signals easier to hear compared to the dipole. This would prove to be our masterstroke, albeit without really knowing if we had the directivity of the long wire to where we wanted.

The clock ticked over to 6.00 pm and the contest was on in earnest. I started calling and immediately the pace was thick and fast. During the first twenty minutes our score rate was good and we were accumulating many contacts into ZL. The contest rules required us to move frequency after twenty minutes and finding another spot was difficult. We eventually got up and running again and the pace continued.

Ray decided that he would do the second hour, as this would allow him to look and learn from me during the first hour. Amazing as it seems, this was Ray's first foray into the world of contesting, not to mention that it was also his first time on 160 m. Hour one seemed to end quickly and Ray took over the microphone. He did not take long to hit his straps and soon had the hang of the computer logging program. Ray's scoring rate was outstanding.

We continued taking turns each alternate hour and, although our scoring rate was OK for the first four hours, the last two hours were not so easy. Band conditions were changing and we had to listen hard for most contact exchanges. The number of ZL contacts remained high throughout the contest and this was the reason that we managed to accumulate a reasonable score at the end.

After struggling through the last hour, we decided to set up the log scoring and see how we did. We made 229 contacts and our points total was an amazing 2,190. The best news was that we scored 570 bonus ZL points compared to 460 bonus VK points. The effort in putting up the long wire antenna seemed to be justified. We felt that our final score would be competitive. We would have to wait for the results to be published to see how well we did. Regardless of the final results, we would always remember our participation in the contest as a great adventure.

The results have now been published and are as follows:

Winner: VK/trans-Tasman Trophy - (refer Multi-operator Rule):

VK3IO Ron Tremayne, Cockatoo, Vic.

Category 6 - Phone:

Participation factor:

68 ZLs divided by 119 VKs = 0.571 - All ZLs points (not bonus points) for contacts with VKs x 0.571

Equal 1st: 2203 pts, VK3IO, Ron Tremayne.

Equal 1st: 2232 pts, VK7CHT multi-Op Vince Henderson (VK7VH), and Ray Smith (VK7NRS) Central Highlands ARC, Newtown, TAS.

Note: Under the "Multi-Operator Rule, a multi-operator station must score at least 100 pts higher than a single-operator station, to have outright claim to any prize (including the VK/trans-Tasman Trophy). If the multi-operator's margin over a single-operator station is less than 100, the Certificate will be shared, but the Trophy will be awarded to the single operator station.

2nd: 1369, VK3BF multi-Op, Victor Punch (VK3CKD), Wheelers Hill, VIC. and Allan Tubb (VK3BF), Glen Waverley, VIC.

3rd: 1308, VK3FRC multi-Op, Frankston and Mornington Peninsular ARC.

Especially in light of the above results, Ray and I both agree that our mini DXpedition to Bruny Island was well worth the effort. We had an absolute ball designing antennas, putting them up and operating in one of the best contests around. Will we do it again next year? You bet. Plans are underway for a two-element wire beam for use into ZL along with the trusty 160 m dipole. We even think that we may be able to make the wire beam three elements.

The reason that the whole weekend was such a success was due to Bernice and Richard Woolley, the owners of Wayaree Estate. They gave us the opportunity to put up whatever antenna we wanted. If you have ever thought of operating portable during a relaxed week or weekend away, then Wayaree Estate should be number one on your list of places to go. Not only do you get to operate an official IOTA island (OC-233); you get to do it in a wonderful cottage at a truly amateur radio friendly vineyard.

The Wayaree Estate web site is under construction at www.brunyisland.net.au and should be up and running soon. You can contact Bernice and Richard Woolley at 4391 Main Road Lunawanna, Bruny Island, TAS 7150. Phone and fax: (03) 6293 1088 or on mobile 0409 973 033. Their email is wayaree@bigpond.com.

Take it from us, this has to be one of the greatest places you could stay at and operate radio. If you do decide to stay at the amateur-radio-friendly vineyard, let them know that you would like to put up some antennas and expect an extra special welcome.

If you have never given the 160 m Trans Tasman Contest a go, we suggest that you do and think about going portable to a location that would allow a big antenna. While you may not have such a great setting as we did, we are sure that you will have a great deal of fun. Look out for us next year, especially if you are in ZL, as we will possibly say "how do you read us on the three element wire beam!"

How do we sum up our time on Bruny Island? For me it is three words "what a hoot". For Ray, one word, "marvellous".

See you on 160 m.

Working AO51 on a budget

Paul Paradigm VK2TXT
IRLP Node 6335
Australian Satellite Enthusiasts Group – OZSATGROUP
www.ozsatgroup.info

Firstly, I must say from the outset that I am new to working satellites myself, having only recently gained my T call, after being away from the amateur service for a while. Most of what I am going to outline in this article is based on reading, chatting to other operators (particular thanks to VK4ZQ and VK2TRF) and my very limited experience. So, if I get something wrong, please accept my apologies in advance!

Also, this article is about working AO51 in particular, though most of what I have to say will apply to other FM Low Earth Orbiting (LEO) satellites.

Secondly, I am going to assume that you will be using (or have access to) a modern 2 m/70 cm dual/tri/quad band handheld transceiver (HT) to work AO51.

To me, working satellites on a budget means using minimum equipment, minimum antenna and includes the need for me to get out of the shack, and into an open area, with a clear view of the open sky. In most cases, the satellite you will be listening to, or working, will be more than 750 km away, so you will need a clear view to the satellite (bird) without anything blocking the signal. At times, even light foliage can block the satellite's weak transmissions. Note AO51 transmits with an approximate power output of either 0.5 or 2 watts.

What kind of antenna do you need?

The bottom line is that any VHF antenna will work for transmission up to the satellite. You can be successful using only the rubber ducky, which came with your handheld transceiver. However it's a little trickier on the receive side, but again, you can be successful using the simplest of vertical antenna.

A whip antenna, such as a mobile collinear attached to the HT with a short coax lead, works a little better. Naturally, the whip will work more effectively if ground plane radials, or a ground plane mesh, are used. While using a ground plane is great, keep in mind that you will need to be holding the antenna system in one hand while operating your HT in the other. So don't make your ground plane too large or heavy!

Crossed dipoles over a ground plane mesh is probably the next step up, followed by a 70 cm Yagi. Just bear in mind that the above only applies to the receive antenna, and most of you will want to transmit as well.

As far as the transmit antenna goes, once again virtually anything will do for working LEO satellites. Your rubber ducky will do just fine on as little as 2 watts. In fact, it's best not to use a lot of power – you don't want to stomp on other users you may not be able to hear. Five or 10 watts is heaps, and you certainly do not want to use more than 20 or 25 watts.

If you are new to radio or satellites, you might be thinking that Paul's gone a bit loopy, telling us that five or 10 watts will work a repeater a thousand or two thousand kilometres away, but take my word for it, transmitting into space is easy - there are no obstacles to absorb or to deflect your VHF RF signals. You can use, say, a three element Yagi to direct your signal towards the satellite. However, if you are going to have problems, 95% of the time it's going to be on the receive side.

It goes without saying that a handheld dual band antenna or antenna system is a must for working LEO satellites. If you are just getting started in working LEO satellites, I would suggest a 2 m/70 cm

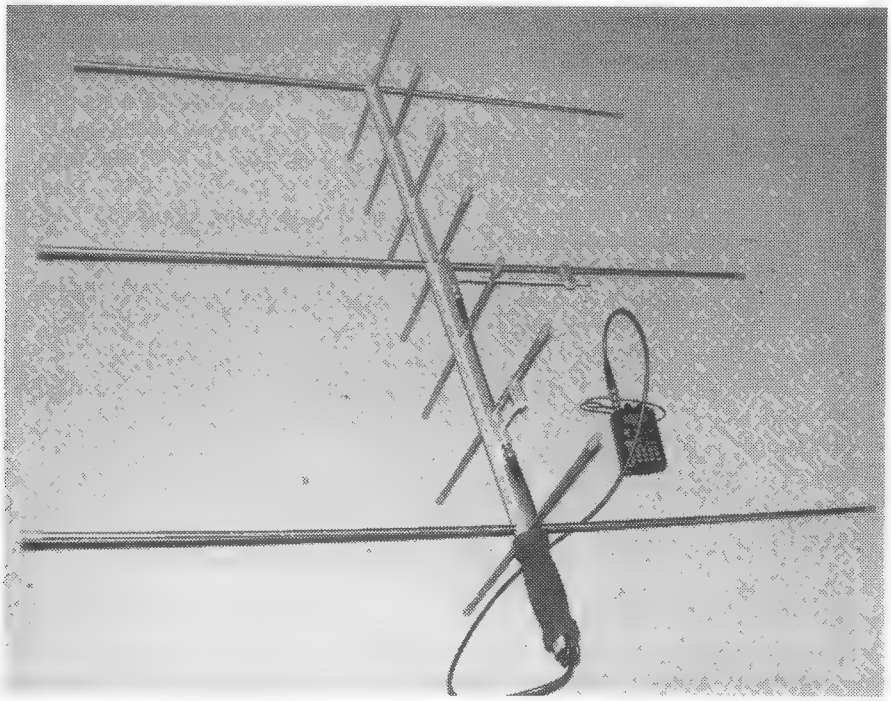


Photo 1 - The Arrow antenna.

dual band mobile collinear antenna with four to eight radials.

If you are really keen, then you might want to purchase an "Arrow" handheld satellite antenna. The arrow is a combined three element 2 m and a seven element 70 cm Yagi mounted at 90 degrees with respect to each other. Unfortunately, Arrow do not have a distributor in 'Oz' as far as I know, and they will not ship to Australia! So if you want one, you will have to buy one from a dealer in the states who offers international shipping.

Antenna position

In the case of AO51, the satellite continuously transmits a carrier signal. This makes it easy to find the bird in the sky. You will need to move your antenna around to find the best position for your particular location. If you are using an omni directional antenna, such as a rubber ducky or whip, you will find that it will work best if you direct the tip of the antenna toward the ground at a 45 degree angle. This sounds a bit strange, but it works by maximising signal strength by utilizing the ground as a reflector. This applies equally to both receive and transmit modes, and you will find that hard surfaces work best. The 45 degree angle also helps to match the satellite's antenna polarization.

Obviously, if you are using a directional antenna, you want to aim it directly at the satellite. Rotating your Yagi on its Z axis can also be helpful. Don't forget that satellites are stabilised in space by rotating on their Z axis, changing their antenna polarization continuously. This is one of the reasons circularly polarized antenna dishes are used, whenever practicable, in commercial situations.

AO51 Frequencies

By now you will have realised that the AO51 satellite uses two different amateur bands for reception and transmission. The downlink, or receive frequency, is 435.300 MHz, and the uplink, or transmit, frequency is 145.920 MHz. To prevent accidental triggering, AO51 requires a 67 Hz sub audible tone to overlay your FM voice signal.

Setting up the HT

Before telling you the easiest way to set up your radio to work satellites, I want to discuss the Doppler effect. Being a licensed amateur radio operator, you probably already know about the Doppler effect. To refresh your memory, Doppler makes a transmitted radio signal seem to change frequency as a transmitter moves toward and away from the receiving station when it is moving at high speed.

Photo 2 - Orbitron, showing a country-wide pass of AO51 in the mid morning.

Recall that this effect is relative, meaning that it applies to both stations, even if only one station is moving. If both the stations are in motion, this complicates the situation even further!

As a transmitter moves toward a receiver, the frequency appears to be higher, and then lower as the station moves away. This effect increases with the frequency of the RF being radiated. In our case, the UHF downlink signal from AO51 will be affected by Doppler far more then the VHF uplink transmission. In fact, the VHF signal isn't Doppler shifted by all that much, so we will not have to worry about altering the uplink frequency at all.

As far as the UHF downlink is concerned, you will see about a 10 kHz shift above and below the stated transmit frequency, as the satellite traverses the sky from horizon to horizon.

Before attempting any satellite work, you will need to disable your HT's squelch control. The signals you will hear will often be too weak to break the squelch, unless you are using a very good antenna.

The easiest way to deal with the Doppler shift on a HT or fixed step transceiver is to alter the frequency in 5 kHz steps, by manually lowering your receive VFO frequency as the bird moves toward your station. When the bird is close to, or directly above, you, your VFO should be set to the published transmit frequency. You then continue to lower the frequency as AO51 continues along its track away from your location.

To make life simpler, I pre-program five memory locations in my Yaesu VX5R as follows...

Memory Location	RX Frequency in MHz	TX Frequency in MHz
51	435.310	145.920
52	435.305	145.920
53	435.300	145.920
54	435.295	145.920
55	435.290	145.920

When the satellite appears over the horizon, as determined by the prediction software, I monitor the satellite on channel 51, and only progress to channel 52 once I lose the carrier or intelligence on the voice signal. As the carrier drops out once more, I change to channel 53, being the actual published transmit frequency of the satellite. It is at this point that AO51 is at its closest, and hence the signal will be at its strongest.

Finally, I continue to channels 54 and

55 as required. This channel changing/ frequency lowering will become second nature with experience.

When you program your HT, I suggest that you use a similar scheme to that outlined above. Don't forget to set up your split to transmit on 145.920 MHz, turn on your sub audible 67 Hz Tone, and, if possible, to automatically deactivate or zero the squelch.

I used channel 51-55, just because it's easy to remember!

Working the bird

The only thing that remains to be said is, be courteous. Working AO51 is very similar to working your local repeater, except that its coverage may encompass almost the entire country, and possibly many others such as NZ, PNG, many of the Pacific island nations, and some countries in SE Asia if you are lucky.

Unlike your local repeater, AO51 QSOs are not made equal. There are huge variations in the capabilities of the stations using the satellite. It is so easy to disrupt other users by dropping carriers on to the frequency or just by calling CQ, when you cannot hear the satellite. Before making a transmission, listen first, and be very sure that no other operator is using the satellite. This is so important when getting started and I have to admit that it is very tempting to transmit when you are not sure whether you can hear the satellite or not. So, if you can only take one thing away from reading this article, it is this...

AO51 continuously transmits a carrier. If you can't hear it - DO NOT TRANSMIT!

When is AO51 available?

AO51 operates 24 hours a day. The satellite criss-crosses the entire globe in a polar trajectory, taking about 90 minutes to complete a single orbit. In order to operate on AO51, you will need a piece of software to predict each pass of the satellite. You will also need an Internet connection to update the satellite's telemetry data (KEPS) every few days.

I use two products, both of which are available from the Internet as free downloads. On my PC I use a program called Orbitron. This is a great free program with all the bells and whistles. You can download it from http://www.stoff.pl/

I also use a program called PocketSat+, which runs on my Palm handheld. This is a shareware program, which can also be downloaded from the Internet.

Many other programs are available for Windows, Mac, Linux, Palm and Pocket PC. I will leave it to you to find your best alternatives tor your platform..

Conclusion

When I first read about working satellites on the Internet it sounded difficult and very expensive. I was so wrong.

In fact, I have found that working AO51 is quite easy and, while it isn't available 24/7, at least I can make it, unlike many local 70 cm repeaters! I have spent very little money, and a little time out in the cold weather, but it works. It is a mode I can use at home with my existing gear and I can go portable with the same impressive results.

So, why don't you give it a try?

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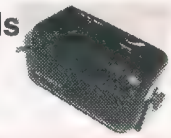

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New draft Australian 40 m band plan

Glenn Dunstan VK4DU
Director WIA
email: vk4du@wia.org.au

The WIA has developed a new draft band plan for the 40 m (7 MHz) amateur band.

The new plan is designed to

- encourage activity above 7100 kHz;
- stimulate experimentation in wideband digital modes; and
- integrate, as far as is possible, with the IARU Region 3 plan, and the plans of other countries.

The underpinning philosophy of the plan is to define band usage in terms of necessary bandwidth, rather than by mode. However, it is recognised that some modes are incompatible, such as analogue voice and data. Accordingly, these modes are each assigned their own sections in the plan.

The new plan features:

- A new broadcast segment from 7130-7150 kHz. This will provide a defined area for weekly broadcasts.
- A new wideband data modes segment from 7180-7250 kHz, which is further sub divided into unattended/automated and attended segments. The subdivision serves to prevent interference between automated and non-automated stations.
- Redefinition of the CW segment (7000-7030 kHz) to a narrow band modes segment with a maximum necessary bandwidth of 200 Hz. This means, in effect, that the previously exclusive CW segment will be shared with PSK31 and other very narrow band data modes.

The change to the previously exclusive CW segment is in accordance with evolving international practice. It is worth noting that the ZL 40 m band plan has had a CW/PSK sharing arrangement in place for some time. Moreover, CW/PSK sharing is proposed under the new US 40 m band plan.

The new draft 40 m band plan is detailed as follows:

Segment (kHz)	Use
7000-7030	Very narrow band modes (maximum necessary b/w 200 Hz)
7030-7040	Narrow band digital (maximum necessary b/w 2 kHz)
7040-7180	Analogue telephony (maximum necessary b/w 8 kHz as per the LCD)
7130-7150	Broadcast sub-segment
7180-7190	Wideband digital, unattended (maximum necessary b/w 8 kHz as per the LCD)
7190-7250	Wideband digital (maximum necessary b/w 8 kHz as per the LCD)
7250-7300	Analogue telephony (maximum necessary b/w 8 kHz as per the LCD)

The current levels of broadcast station interference above 7100 kHz will mean that some degree of flexibility is required in use of the new band plan.

The plan is designed to be fully implemented once 7100-7200 kHz reverts to amateur primary status in 2009.

Comments on the new plan close on April 30, 2006.

Please send your comments to vk4du@wia.org.au

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Mobile amateur radio operation

Steve Mahony VK5AIM

Mobile amateur radio operation is as HAZARDOUS as you make it! The hand microphone can become a nuisance with its curly cord if you are not careful. However, the hands-free single earpiece and boom mic is the answer.

The Yaesu Y2 series of headset/mic has been available for over 20 years. I have had mine since having an FT-290R, even when my wife used to call me "DAVROS" from the evil bloke in Dr WHO! I used to get funny looks until the mobile phones became popular with their hands-free systems. These hands-free earpieces and mics are an excellent source of amateur radio hands-free equipment, albeit with modifications (see my article on this conversion in the October 2001 issue of Amateur Radio pages 14 and 15).

The "safety" people will say that this communicating with mobile amateur radio is hazardous! Surely no more than conversing with your passenger! We have all seen drivers who, in chatting to their passenger, look at the passenger more than the road and the traffic ahead. What about the drivers who have their car radios or stereo systems going so loud you can hear it in your car with all the windows wound up, his and yours? You even see them nodding their head and/or tapping the steering wheel to the beat of the music. They are not concentrating on the traffic!

As regards doing two things at once, the women claim to be able to do it better than men! You have to do that, anyway, driving a car, although not quite as much with an automatic. Pilots of aeroplanes, from little Cessnas to 747s, all have to communicate wearing headsets and boom mics as well as keep an eye on all those instruments and controls. Certainly they get most of their information via the headset, but they don't have to listen for police, fire and ambulance sirens and, thank heavens, there are not any other pilots who behave as stupidly as some of the car drivers on the roads today. As yet we have not progressed to "automatic pilots" in cars, although they are heading that way with GPS navigation and automatic speed control.

By using some common sense, enough to say to the person you are in a QSO with that the traffic is getting heavy and you had better go QRT to concentrate on the traffic, you should manage mobile amateur radio quite well.

Mankind has survived over the centuries on wheels, from his first chariot to our present day chariots, and we will go on surviving despite all the stupid things we do.

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Photo 1 - A mobile phone earpiece and microphone with shirt clip. It has a PTT control box.

Photo 2 - The Yaesu Y2 headset and microphone with a home-brew PTT control Box. A clip holds it onto the seat belt. The PTT switch is locking one way and spring loaded the other.

Photo 3 - A disposals ex-telephone single earpiece headset and microphone. It has a similar PTT control box to the Y2 headset combination.

Allan M Doble VK3AMD

Allan McKenzie Doble, born on 7th September 1911 passed away on 13th February 2006. He is known to many throughout Australia as the voice of the Radio Amateurs Old Timers' club. Allan was always a contributor.

His interest in radio started with building a crystal set at age 12 and although apprenticed as a plumber, he learned radio theory by correspondence. As a young man he was required to do military service and joined the army 3rd Infantry Divisional Signals where he built their first short wave receiver. During the depression he obtained work in a radio factory, working his way up to building and later selling receivers.

He fully expected to join the signals section when World War 2 broke out, but another of his contributions got in the way. As the storm clouds of war gathered Australia began to make preparations. At this stage Allan was working as a sales representative for a company that amongst other things made sound insulation. He was attached to the Department of Aircraft Production to help with sound reduction in Beaufort bomber cockpits. At about this time he happened to see an opportunity to acquire an agency for micro-switches made in the UK. This achieved he was asked about the possibility of local manufacture. Allan knew someone who might help so he arranged meetings of the various parties and within months a full scale production had begun. Micro-switches were important to the war effort as they were the devices that detected when bomb bay doors were open or closed, undercarriage up or down, a gun mount at the end of its travel. Every plane, tank and ship had dozens of these installed. Soon he was asked to help set up a second factory to make micro-switches.

When Allan was called up, as soon as his association with micro-switches was spotted he was sent back to work. Allan was at the time disappointed that he could not join friends in the Army; however, it was all his own doing.

Allan had been a licensed amateur before World War 2 and some time after it was over was encouraged by friends to set up again with a Type 3 Mark II. Eventually he converted to Yaesu and later Icom gear.

It was the early 70s when I moved to Hughesdale about 200 m from Allan and surprisingly it took about 5 years before I came across him on air. He asked how long I'd been there. "Oh quite a while" I said, nearly 5 years and suggested that perhaps he had moved there recently. "Ah well not exactly; he said I've been here for over thirty years".

It was about that time that the Radio Amateurs Old Timers Club of Australia was formed and Allan was amongst the foundation members. In due course I joined the club too and it wasn't long before Allan started asking if I might join the Committee. Too busy at work I said.

Allan could never take "No" as an answer for such things. His persistence was legend. We were in regular contact and as soon as I retired from full time work Allan was twisting my arm and eventually propelled me onto the Club committee. I was to find all the other committee members had similar stories of how they got there.

Allan had served as broadcast announcer for 11 years and was president of the Club for many years stepping back to vice president only recently.

He was singularly successful in obtaining first class speakers for our twice a year luncheons, no doubt due to that inability to accept "no". Recent speakers included the senior electronic designer for the Stealth bomber and a RAAF officer involved in running Australia's Over the Horizon Radar. He was actively involved in the club up to a few days before he died.

There were two other things he was justly proud of. One was proving the official war historians wrong over the midget submarines used by the Japanese to attack Sydney harbour. Allan's research, prompted by Col, VK1AU, unearthed circuit diagrams and detailed descriptions of the two way radios used for rendezvous with the mother submarine. Even the present day Japanese historians were surprised by Allan's discovery – the Japanese destroyed many technical records as the Americans advanced.

Photo by Bill VK3BR

The other achievement was to do with the desk used by Mawson and Shackleton during their Antarctic expeditions. One of Allan's friends, Myrvin "Snow" Campbell, had purchased the desk at auction in 1930. After Snow's death Allan with assistance from Snow's widow Marjorie, orchestrated the refurbishing of the desk and its donation to The Antarctic Division where it is on display as part of the country's heritage.

In his long and productive life there were many interesting stories of his contributions, such as his involvement in devising the equipment to make the sandblasted finish on the bottles of Gilby's Gin.

He played two rounds of golf each week until a year or so ago, and until just before the end of 2005 still hit a few balls on the practice fairway each week.

The Chapel was filled to overflowing at his memorial service on 20th February 2006, showing that although he had outlived many friends he continued to make new ones. Many radio amateurs and members of the Moorrabbin and District Radio Club and the RAOTC are indeed grateful to have had Allan as a colleague. He pressed us to do more than we thought we could and we are better for it. He will be missed.

Ron VK3AFW

Dr Young sheds some light on VHF flutter (picketing)

Philip Gebhardt VE3ACK
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If you have spent much time operating FM mobile on the 2 metre band you have probably been plagued at times by rapid fading or picketing. Sometimes you can hear it on the FM broadcast band or see it on TV signals. If you live near a large airport, you'll hear the rapid fading of FM broadcast signals as planes take off or land.

We can turn to light waves and an experiment you may have learned about in school to gain an understanding of how the received radio signal can vary so rapidly. The similarities between light and radio waves are explored further in Appendix 1.

Young's experiment

The key to understanding flutter is found in an optics experiment conducted in 1801 by English physicist Thomas Young. Figure 1 shows how the experiment was set up. Light from the bulb on the left shines through a slit in the first plate. The slit acts as a point source of light. Spherical waves from this slit pass through two slits in the second plate. These two slits now act as two point sources of light. And because they were produced from a single source, the light waves from these two slits will always be in phase; that is, they are a pair of coherent sources. See Appendix 3 for further explanation of coherent sources.

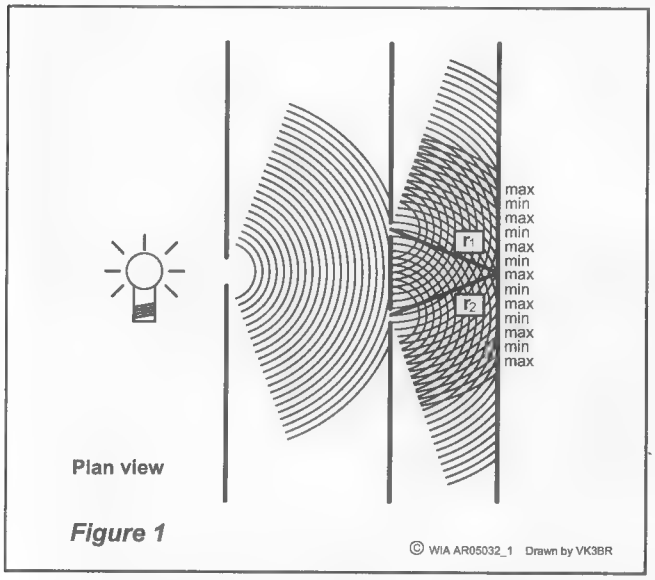

Fig 1 - Young's experiment.

When the two coherent light sources in Young's double slit experiment shine on a screen, they produce the interference pattern shown in Figure 2. Notice that distances r_1 and r_2 (the distances from the slits to the screen) in Figure 1 are equal. Therefore light from the two sources arrives at this point on the screen in phase and total constructive interference produces an area of maximum brightness. As you move across the screen from this central point, distances r_1 and r_2 are no longer equal (r_1 increases and r_2 decreases, or vice versa) and the two wavefronts are out of phase. The brightness decreases until a point is reached on the screen where the two wavefronts are 180° out of phase ($r_1 - r_2 = \lambda/2$) and total destructive interference causes them to cancel. A dark region (minimum light) appears here.

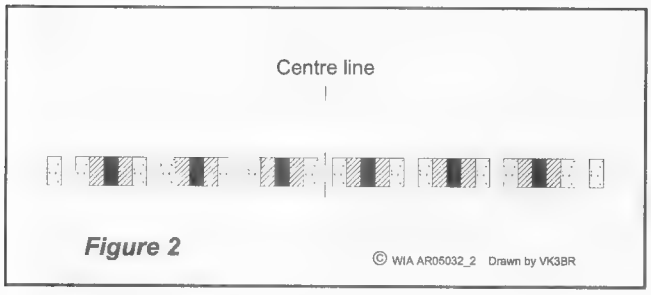

Fig 2 - Representation of interference pattern created in Fig. 1.

Moving further away from the central point results in the wavefronts coming back in phase ($r_1 - r_2 = \lambda$) and constructive interference produces another area of maximum brightness. The cycle repeats as you move further away from the central point. Total constructive interference occurs whenever $r_1 - r_2 = m\lambda$ (where m = 0, 1, 2, 3, ...); total destructive interference occurs whenever $r_1 - r_2 = (2m+1)\lambda/2$. Similar light and dark regions appear on the screen to both left and right of the central point. See Appendix 2 for a simple experiment to demonstrate this effect.

Young's experiment illustrates how flutter on radio signals is produced. Imagine that you are in a tiny car driving from the left to the right of the screen in Young's experiment. You would alternately pass through regions of bright light (maximum signal) and darkness (minimum signal). You would see flashes of light as you drive along the screen. The faster you drive, the faster the light flashes.

The VHF radio situation

Now look at Figure 3. This time, you really are in your car and you're driving along a country road. In this case, your 2 metre antenna detects two signals, one direct from the transmitting station and another which is a reflection of the same signal. The reflecting surface could be a large building, for example.

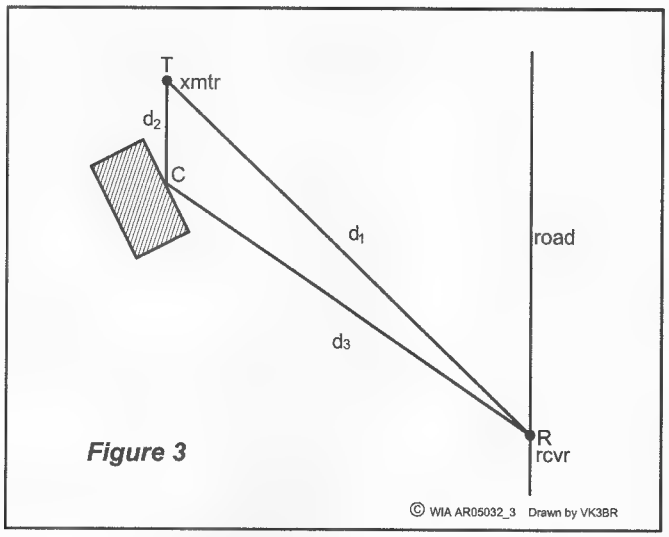

Fig 3 - Direct and reflected signal paths.

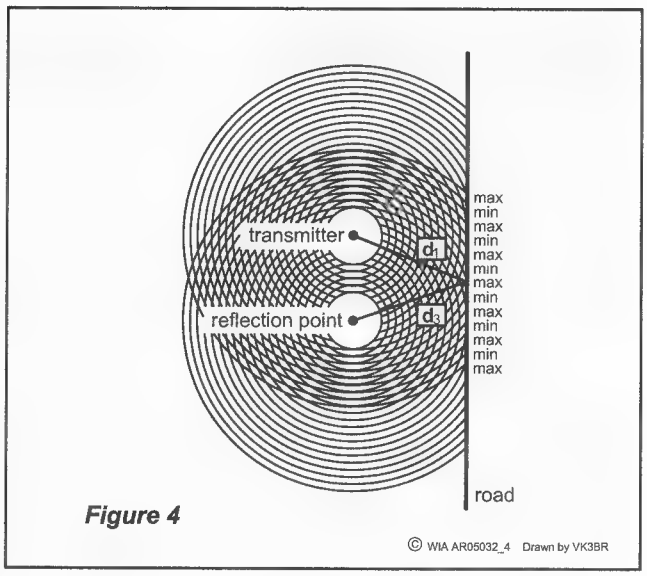

Fig 4 - Radio version of Young's experiment (compare with Fig. 1).

Both signals (like the two sources in Young's experiment) are generated by a single source - the 2 metre transmitter. They may not be exactly in phase, but their phase relationship never changes. Therefore, like the two point sources in Young's experiment, these two radio signals are coherent.

In Figure 4, which shows the radiating wave-fronts in a similar style to that in Figure 1, the screen is replaced by the road traversed by your car. The interaction between the two signals creates interference patterns in all the space they share, and you sample a cross-section of this as you drive along the road. Just as the two slits in Young's experiment cannot be replaced by two light bulbs, the two radio sources here cannot be replaced by two separate transmitters. The frequency difference between the transmitters would result in a rapidly-changing, time-dependent phase difference which would cause the interference patterns to average out to zero.

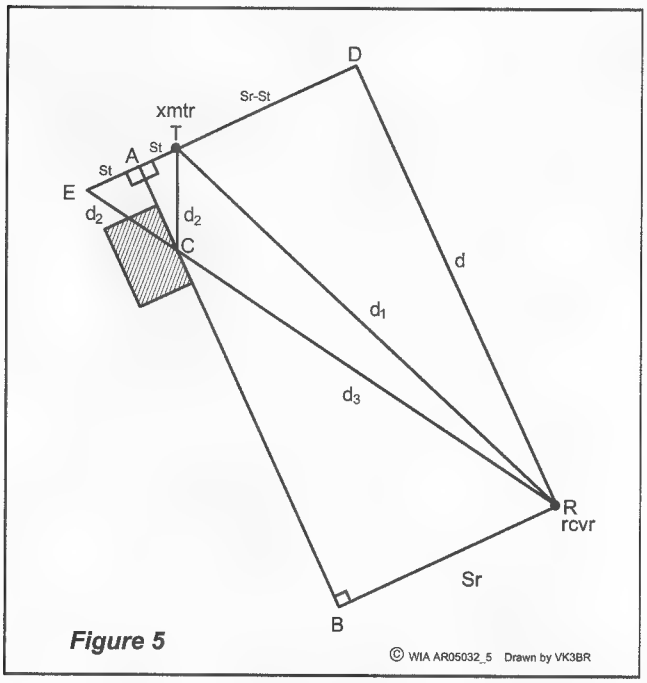

Fig 5 - Analysis of reflected signal phase delay (modified Fig. 3).

To enable us to determine mathematically what is happening we analyse Figure 5, which is the same as Figure 3, with some geometric construction added. Reflection is occurring at point C. The reference for this analysis is the position and attitude of the reflecting surface and ACB is a line drawn along that face. AT, of length St, is the perpendicular offset of the transmitter from that reference line. Similarly, BR is the perpendicular offset of the receiver, and has length Sr.

Now we complete the rectangle ADRB. The length of side RB is Sr, the receiver offset. The length of side DR, labelled d, is the distance of the receiver from the transmitter; not direct, but projected back onto our reference line ACB along the reflecting surface. Note that side AD, which is equal to RB, is made up of lengths St and (Sr – St).

Finally we construct triangle ACE, which is identical to triangle ATC because the angle at which the signal departs the reflecting surface is equal to its arrival angle. The purpose of triangle ACE is to create the larger triangle EDR, two sides of which have lengths directly related to the positions of the transmitter and receiver.

Using Pythagoras theorem, in triangle TDR -

$d_1^2 = d^2 + (S_r - S_t)^2$

where d_1 is the direct path length.

Therefore,

$d_1 = \sqrt{[d^2 + (S_r - S_t)^2]}$ ***Eq'n 1***

Also, in triangle EDR -

$(d_2 + d_3)^2 = d^2 + (S_r + S_t)^2$

where $(d_2 + d_3)$ is the reflected path length.

Therefore,

$d_2 + d_3 = \sqrt{[d^2 + (S_r + S_t)^2]}$ ***Eq'n 2***

Subtracting Eq'n 1 from Eq'n 2 yields

$(d_2 + d_3) - d_1$

$= \sqrt{[d^2 + (S_r + S_t)^2]} - \sqrt{[d^2 + (S_r - S_t)^2]}$ ***Eq'n 3***

where $(d_2 + d_3) - d_1$ is the difference in path length between the direct and reflected signals.

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We can also calculate the phase delay of the reflected signal, based on this path difference.

$$\delta = \frac{360 \times \sqrt{[d^2 + (S_r + S_t)^2]} - \sqrt{[d^2 + (S_r - S_t)^2]}}{\lambda}$$

Eq'n 4

where δ is the phase delay (in degrees) of the reflected signal, λ is the wavelength of the signal and d, S_t, S_r and λ are in the same units of length.

Equation 4 shows that the phase delay of the reflected signal depends on d, S_t and S_r. That is, it depends on the relative positions of the transmitter, the reflection point and the receiver (your car). Fortunately Equation 4 can be simplified by doing a binomial expansion of Equations 1 and 2 and substituting them into Equation 4. This yields:

$$\delta = 360 \times \frac{2S_tS_r}{\lambda d} \text{ or } \frac{720S_tS_r}{\lambda d}$$

degrees of phase delay

Linking the VHF radio situation to Young's experiment

We can relate VHF flutter to Young's optical experiment using Figure 6. As illustrated in Figure 4, a radio signal is radiated direct from point T, and by reflection from point C, and we explore the interference pattern created along the road PQ. And, as in Figure 5, the distance from the transmitter to the car is d_1, the distance from the transmitter to the reflector is d_2 and the distance from the reflector to the car is d_3.

Here we use several simplifying assumptions. The first is that the signal path from the transmitter to the reflection point is parallel to the (straight) road. The second is that the reflection point is much closer to the transmitter than it is to the receiver (car). This means that the angle between the direct and reflected signals arriving at the receiver is very small.

Now we construct triangle FGR. F is the mid-point between the two signal sources and FG is a line perpendicular to the road PQ. So point G is equidistant from both points T and C, corresponding to lengths r_1 and r_2 in Figure 1. The angle θ is approximately equal to that in triangle TEC.

To obtain an expression that relates all the signal path lengths -

TR - CR = TE (approximately, because $d_2 << d_1$)

And from triangle TEC, TE = $d_2(\sin\theta)$.

Therefore -

$d_1 - d_3 = d_2(\sin\theta)$ ***Eq'n 5***

For $d_2 << d_1$, θ is small and $\sin\theta \approx \theta$ (θ in radians)

So Eq'n 5 becomes -

$d_1 - d_3 = d_2\theta$ ***Eq'n 6***

Now, in triangle FGR, $\tan\theta = y/z$

Also, since θ is small, $\tan\theta \approx \theta$ (θ in radians). Therefore -

$\theta = y/z$ ***Eq'n 7***

Substituting Eq'n 7 into Eq'n 6,

$d_1 - d_3 = d_2y/z$ ***Eq'n 8***

For total constructive interference to occur (and produce a maximum in the received signal), the path length difference between direct and reflected signals must be an exact multiple of the wavelength; ie,

$d_1 - d_3 = m\lambda$ ***Eq'n 9***

where m = 0, 1, 2, 3, ...

Now compare this to Young's experiment where $r_1 - r_2 = m\lambda$.

From Eq'n 8 and Eq'n 9,

$d_2y/z = m\lambda$

and therefore -

$y = mz\lambda/d_2$

where y is **a position of maximum signal strength** (along the road, and measured from point G in Figure 6).

Finally, if we increase m by 1, and

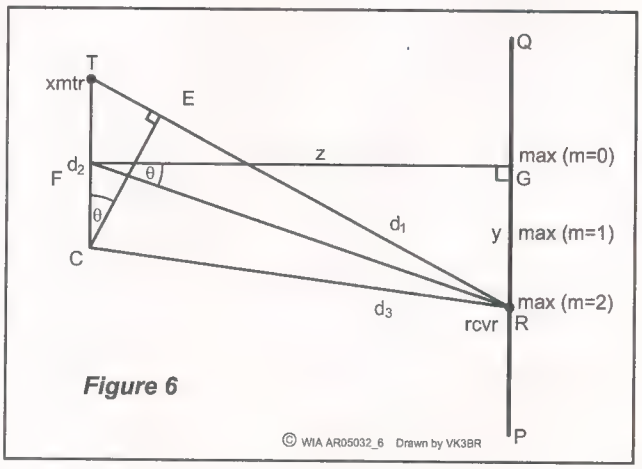

Figure 6

Fig 6 - Calculating the locations of signal maxima.

subtract the previous value of y, the distance between two consecutive maxima is -

$\Delta y = [(m+1)z\lambda/d_2] - [mz\lambda/d_2]$ ***Eq'n 10***

Example to illustrate VHF flutter

z = 30 km (distance from transmitter to road, approximately)

m = 5 (the wavelength multiple)

λ = 2 m (the VHF signal)

d_2 = 1 km (distance from transmitter to reflection point)

Then –

$\Delta y = [(m+1)z\lambda/d_2] - [mz\lambda/d_2]$ Eq'n 10 above

Now insert actual values, all in metres

$\Delta y = [(5+1) \times 30{,}000 \times 2/1000]$
$- [5 \times 30{,}000 \times 2/1000]$

$\Delta y = 360 - 300 = 60$ m (distance between signal maxima)

In this example, if a car is travelling at 100 km/h, the time taken to travel 60 m is 60/100,000 hours or 60 x 60 x 60/100,000 seconds = 2.16 seconds.

Therefore a maximum in signal strength occurs every 2.16 seconds.

Practical interpretations

For flutter to occur, one of the three locations (the transmitter, the reflection point, or the car) must be moving. In the case of a 2 metre mobile station, the transmitter and the reflection point are fixed while the car moves. In the case of flutter on the FM broadcast band at receiver locations near airports, the transmitter and the receiving site are fixed while the reflection point (the aircraft) is moving.

In order for Figure 6 to match the classical mathematical solution to Young's experiment and to maintain a general solution to the problem, several assumptions have been made. It has been assumed that the direct signal and the reflected signal are in phase. This will only happen for specific values of

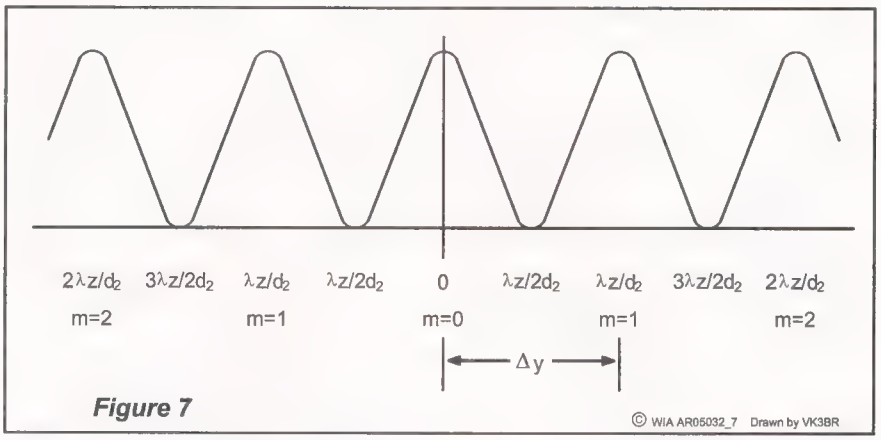

Fig 7 - Signal strength variation with distance along the road.

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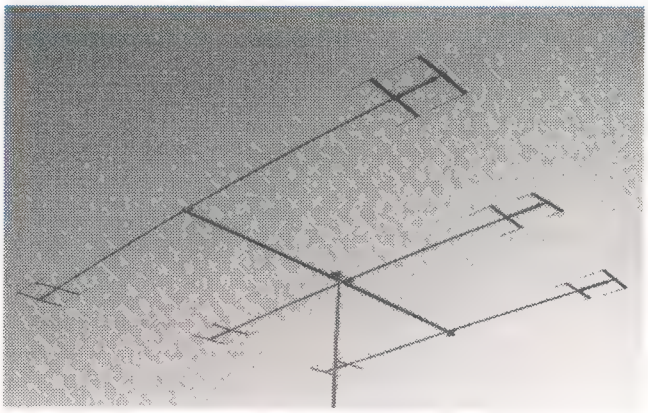

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d_2, the distance from the transmitter to the reflection point. Nevertheless, the direct signal and the reflected signal are coherent (ie, have a fixed phase relationship) for all values of d_2 and therefore the two signals will produce an interference pattern. Depending on the value of d_2 and therefore the relative phase of the two signals, the maximum and minimum points will simply shift along the road. Furthermore, due to the reflection process, there will be a phase shift introduced at the reflection point, which will also displace the maximum and minimum points.

Also, the road in Figure 3 runs parallel to d_2. Obviously, this is not necessarily the case. As with the phase shift, the orientation of the road will simply alter the positions of the maximum and minimum points. You will notice that, in Figures 3, 5 and 6, the distance between the transmitter and the reflection point is small compared to the distance between the transmitter and the receiver. This too does not necessarily hold true during mobile operations.

Earlier it was mentioned that when the two signals are 180° out of phase, there is destructive interference and the two signals cancel. However, there will only be total destructive interference (minimum signal equals zero) when the two signals have the same amplitude. If the reflected signal is weaker than the direct signal, then the destructive interference will produce a minimum (but non-zero) signal.

Clearly there are many conditions under which flutter can arise. Nevertheless, just knowing how flutter occurs may be enough to make it more tolerable when you're trying to carry on a QSO.

Appendix 1 - Light and radio waves

Various types of radiation (radio, heat, light, etc) have differing wavelengths, but they are not fundamentally different. They all travel through free space at the same velocity and are generally understood in terms of the same theory. For example, both light and radio waves are subject to reflection, refraction and diffraction. What characterises the various 'kinds' of radiation are the means by which they are generated and detected. Consequently, observations made on one 'kind' of radiation can usually be assumed to be true of the other 'kinds' (with the exception of observations which are dependent on wavelength).

This concept is known as the unity of radiation. The unity of radiation enables you to apply to radio the principles you learned about light in high school. The concepts dealing with constructive and destructive interference presented in this article are based on the unity of radiation and an understanding of how light waves (and therefore radio waves) behave.

Appendix 2 - Observing interference patterns

You can recreate the double slit experiment which Thomas Young performed in the early 1800s. The interference pattern which appears in this experiment is a series of bright and dark fringes of light similar to Figure 2. The pattern is an optical version of the picketing or flutter experienced on VHF signals.

At optical wavelengths, the slits need to be very narrow and closely spaced. This is difficult to achieve, so it is easier to use pinholes. Either configuration (slits or circular apertures) is known as a wavefront-splitting interferometer. Punch two small pinholes in a thin piece of aluminium foil. The pinholes need to be extremely small, so use the smallest sewing needle you can find and press it into the foil only far enough to produce a hole. Pushing the needle right through the foil so the hole is the diameter of the needle will probably produce a hole which is too large. The spacing between the centres of the two holes should be approximately three radii.

Do the experiment at night. Your light source can be any strong source such as a streetlight or a car headlight. I obtained good results with streetlights at least 100 metres away. Hold the foil directly in front of and very close to your eye. You will find the best distance from the foil to your eye by experimentation.

Appendix 3 - Young's double slit experiment.

The apparatus is known as a wavefront-splitting interferometer because the two slits in the second plate split the wavefronts approaching from the left into two separate sources. Wavefronts from these sources then interact to produce an interference pattern, which appears on the screen at the right.

You might wonder why we don't simply replace the two slits with two light bulbs as sources. The problem is that the filaments in lamps contain a large number of atoms. Each atom is capable of radiating a wave train for about 10^{-8} seconds. Therefore, the maximum time the two lamps can maintain their relative phases is, at best, 10^{-8} seconds. They would indeed produce an interference pattern, but the pattern would only remain constant for that brief time, after which it would change as the relative phases shifted. The pattern would then remain constant for another very short time before it changed again.

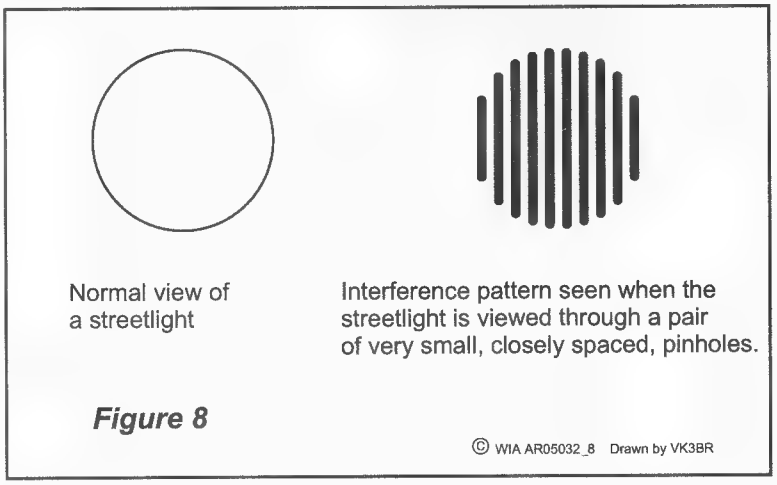


Fig 8 - Experimental interference pattern.

The *Black Stick* errors

I write with reference to the article *The VK5BUG Black Stick*, which appeared in the last edition.

While construction of the 'Black Stick' as described in the article may well result in an antenna that provides wide frequency coverage, performance will be mediocre, at best.

The only really effective way to feed a vertical antenna is to match the antenna to the transmission line at the antenna feed point – not at the transmitter end as described in the article. Attempts to match the feed line impedance at the transmitter end result in high losses because of the very high VSWR on the feed line. Of course, VSWR and therefore loss varies with frequency.

For instance, total loss in the "Black Stick" antenna, feed line and ATU at 3.5 MHz is approximately 13dB, - i.e. only 5% of the transmitter output power is radiated.

Moreover, the 'Black Stick' configuration will also generate radiation from the feed line - it is effectively part of the antenna - thereby increasing the chances of RFI at the radio end with all that implies for EMC/EMR.

Unfortunately, the author is in error when he states that:

"Of course there must be a mismatch between the feed line and the radiator in my Black Stick, but RF loss from such a line, even if it showed an SWR of 25:1 up at 28 MHz, would still be less than the loss in RG58 coax when the latter is matched."

A 7 m length of Belden 8222 operating with a VSWR of 25:1 at 28 MHz exhibits a loss of 5.5dB.

A 7 m length of RG58C/U operating into a 50 ohm load at 28 MHz (i.e. VSWR 1:1) exhibits a loss of 0.54dB.

I understand that the Belden 8222 cable the author uses for his feed line may no longer be commercially available.

The most effective and convenient method of feeding an unloaded vertical antenna for multi band operation is to use a remote automatic tuner at the base of the antenna. There are a number of commercial units available, with the most popular being made by the American company SGC.

Use of a remote tuner means that the transmission line impedance is matched to the antenna feed point impedance, minimising VSWR (and therefore loss) on the feed line. This configuration also minimises the possibility of RF energy being present inside the operating room.

More information on the care and feeding of multi band vertical antennas may be found at

http://www.vk1od.net/

73 Glenn Dunstan VK4DU

Technical article shortage

The most likely reason for the shortage of technical articles is that many members regard that task as a waste of time best devoted to the next project. Also, asking for technical "articles" implies a requirement for magazine quality and that is probably a disincentive. Writing a technical report is a different exercise and experimenters and constructors appreciate the purpose and value of a report to finalise a project. So, publish "technical reports" not technical articles.

The purpose of a technical report is to record the processes involved and the conclusions drawn after the completion of the experiment or construction project. Writing the report improves the author's understanding of the subject and provides useful information for future reference and to invite discussion and criticism. Publication in AR serves those latter purposes and editorial policies should include provision for that in a regular "technical discussion" column.

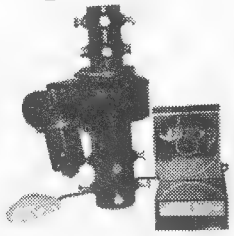
A technical report should be strictly utilitarian – providing technical information clearly and concisely. Presenting the facts is more important than style of presentation but style should not be neglected entirely because it determines readability and ease of understanding. Most technical authors are not skilled word spinners and a high degree of that skill is not needed. Editorial scrutiny for technical accuracy will not be necessary because a report is just that; a report of actual experiments or construction projects carried out by the author. Scrutiny by readers and their published comment will reveal technical inaccuracy and likely misleading information.

The school laboratory report format is a simple, adequate presentation, and particularly suited for the new generation of Foundation Licensees. Examples have appeared in past issues of AR and from memory the sections are aim, apparatus, method, results discussion and conclusions.

Lindsay Lawless VK3ANJ

The views expressed in the *Over to you* column are those of the authors, and do not necessarily reflect the official policy of the Wireless Institute of Australia.

OzSpid Rotators



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Re-using microwave oven transformers for high-voltage power supplies

Drew Diamond VK3XU

One of the difficulties for the linear amplifier builder is in obtaining high-voltage power transformer(s). A popular requirement for (say) a 1.3 kV plate supply is a transformer with a secondary voltage of typically 1 kV RMS at perhaps 500 mA or 1 A. A costly item, even second-hand, and as a made-to-order part? It hardly bears thinking about.

WARNING.

Voltages in equipment in this article are lethal. This article is only for experienced operators. Rigorous attention to safety is mandatory.

Particular attention should include making sure that contact with this equipment during operation is impossible, even by accident such as bumping and fainting. A second person as a safety observer who can disconnect the power and call for help is recommended.

Technical Editor.

A few resourceful enthusiasts have had some success with transformers rescued from defunct microwave ovens. They certainly look attractive to the handy amateur. Let me list some of their features: cheap (usually zero cost), well-made to high electrical and mechanical standards, core/primary rating of about 400 ~ 500 VA, re-workable for low and high-voltage PSUs, large volts-per-turn, crude voltage regulation provided (by running in saturation mode), and quiet operation (due to welded laminated core).

Their disadvantages are: increasingly poor efficiency when operated above about 200 V AC primary voltage (and therefore runs very hot if powered continuously), secondary HV winding connected to core (easily altered - see later), and the welded core makes disassembly impossible.

In its usual application, the transformer runs in 'saturation' mode, where the primary magnetizing current is quite large (typically 1.5 A). This, together with the magnetic shunts fitted to the core, provides a degree of output DC voltage regulation, and so allows for a wide range of loads upon the 2 kV secondary winding that powers the magnetron oscillator (Reference 1). Intermittent domestic use normally provides prolonged cooling-off periods for the transformer, so a much smaller core may be employed. To prevent damage, however, a number of thermal cut-outs are fitted to vital components within the appliance (Reference 1).

The estimated number of turns found on the typical "rescued" transformer primary is about 240, which is one volt per turn - a very high figure. If one makes some reasonable assumptions about the core flux density; application of the usual winding formula (References 2 and 3) confirms that the primary is actually better suited to 120 V AC, giving (usually) 0.5 volts-per-turn.

A solution is to run two identical or similar transformers with their primary windings in series (120 V AC across each primary) from a 240 V AC supply. Magnetising current is then only about 180 mA. Their secondary windings may now be connected in parallel to give 1 kV AC (about 1.3 kV DC), or in series to produce 2 kV AC (about 2.6 kV DC) for "voltage-hungry" tubes like 4-125s or 813s. We thus have two 400 VA transformers, loafing along, each capable of delivering its rated VA continuously.

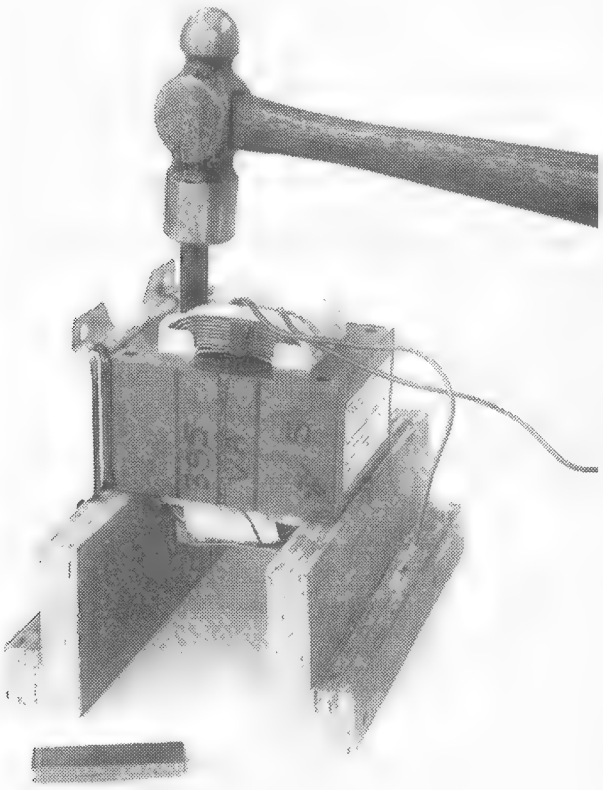


Photo 1 - Removing magnetic shunts.

Method

Before I go further, let me state the following warning: Tests upon, and modifications to, mains transformers, as described here, must only be done by suitably experienced and/or qualified persons. ***There is a real danger of ELECTROCUTION should skin contact occur.***

Here are some essential rules:

- ***Keep hands off when mains voltage is applied. Do not rely upon the insulation of multimeter test prods and leads.***

Therefore

- ***Connect your meter using suitable connectors, and then adopt a strict "hands off" attitude whenever mains is applied.***
- ***Always earth the cores to mains ground.***
- ***Never leave a test set-up unattended by you. Disconnect and remove the mains lead when each work session is completed.***

Find two or more discarded ovens (they should be heavy - newer ovens use switch-mode power supplies) of similar power rating. Upon disassembly, save the spade connecting wires, particularly the valuable HV wires that connect the diode, magnetron and capacitor assemblies.

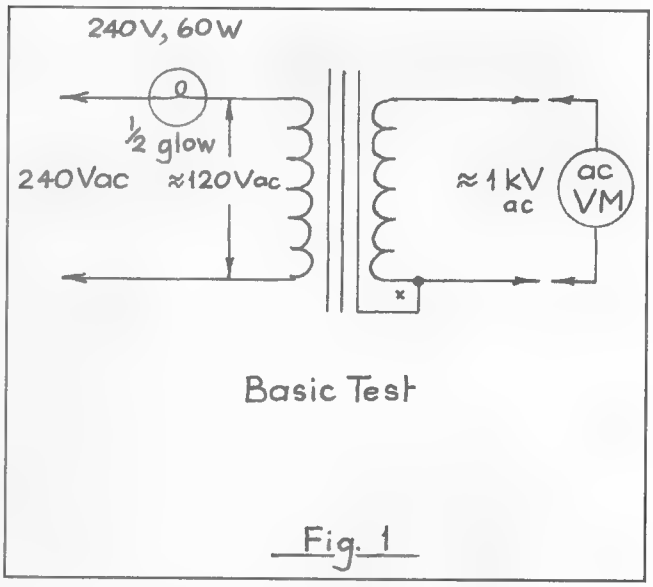
With a multimeter on ohms x1, measure the resistance of the primary winding, which should be about 1.5 ohms. The secondary winding is measured between the mounting plate and the single spade lug. A slow reading of about 60 ohms to 90 ohms should be obtained. If there are no "brown" smells, the transformer is probably serviceable.

The transformers must be fairly well matched for VA rating. Measure the winding-limb area, shown marked upon the core in Photo 1. VA may be calculated:

VA = $(5.58 \times L \times W)^2$ (References 2 and 3) where L and W are in inches, ***or***

VA = $(0.00865 \times L \times W)^2$ where L and W are in mm.

To test a transformer, you will need a multimeter capable of measuring to 2.5 kV AC (such as an AVO Model 8). Wire a mains lead to a 240 V 60 W lamp connected in series with the primary winding, as shown in Figure 1. All connections MUST be insulated. Apply mains power. The lamp should only light to about half brilliance, indicating that the transformer is probably good.



Carefully measure the voltage across the reactance of the primary winding, which should be about 120 ~140 V ac. Remove power, then connect your meter, set to 2.5 kV fsd across the HV winding. Apply power again. You should obtain about 1 to 1.3 kV ac across the secondary. If your two transformers give similar voltage readings, and their core VA ratings are the same or similar, then it is quite practicable to connect them as described later.

For amateur applications that require a well-regulated, low-ripple HV supply, it is impracticable to use a secondary that has one side grounded to the core (and don't even think about 'floating' to core). In most instances the coil wire may be carefully 'lifted' from the ground lug, so that the winding is isolated. Extensive tests upon a number of transformers have shown that the quality of insulation normally fitted is easily capable of withstanding 2 kV AC RMS between winding inner and core.

The aforementioned magnetic shunts should be removed. Place the transformer upon two pieces of timber then, using a suitably sized length of steel or brass, drive the two shunts out of the core, as depicted in Photo 1. One thus removed shunt may be seen in the foreground. The 'flying' leads are those of the 3.3 V heater winding. They may be simply clipped, leaving the winding intact, or the (usually) three turns may be unwound from the core, as desired.

Photo 2 shows a typical modification, where the ground connection has been severed, and a new length of high-voltage wire soldered to the enamelled wire where it emerges from the coil. Use a cable-tie, or similar, looped

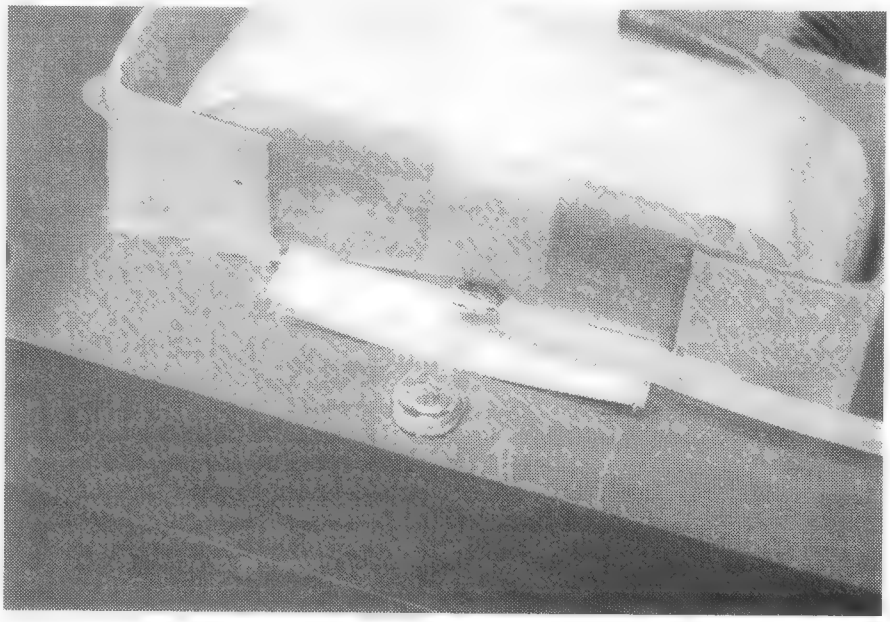


Photo 2 - New HV wire connected.

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* 0.1-50MHz Complex impeadance
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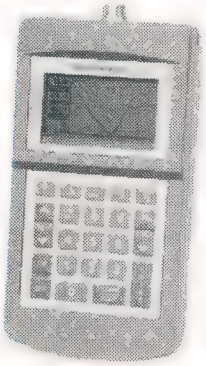

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around the winding, where necessary, to anchor the new wire. The connection, and the area around the wire's exit, must be covered with a layer of acid-free silicone, as pictured in Photo 3.

Fabricate a rectangle of Bakelite, phenolic, or similar insulating material such that it spans two of the core mounting holes. Fit two well spaced (from each other, and ground) screw terminals and/or spade connectors to suit your planned project. The insulator may be mounted upon the transformer using $^{5}/_{32}$" Whitworth or 4 mm all-thread in a manner like that shown on Photo 4.

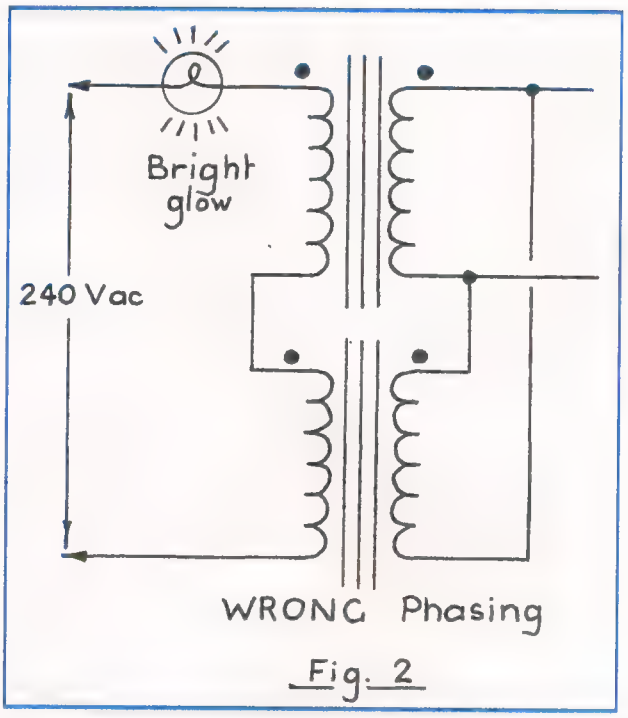

Fig. 2

1 kV AC Secondary

Having thus modified two transformers, it only remains to find the correct 'phasing' of the windings. Wire the primaries in series with your 60 W test lamp, as shown in Figure 2. Arbitrarily connect the secondaries in parallel. Apply mains power. If the lamp is bright, the phasing is wrong. Reverse either the connections to one primary, or those of one secondary, and try again, whereupon the lamp should glow dimly (Figure 3). With the lamp out of circuit, measure the secondary voltage, which should be about 1 to 1.1 kV AC. Each primary should have 120 V AC applied, as shown. Suitably mark your connectors accordingly.

2 kV AC Secondary

The secondaries are connected in series, as shown in Figure 4, such that the formerly grounded sides of each winding, marked 'x', are wired together (thus greatly reducing the stress on the insulation). Arbitrarily wire the primaries in series. Connect your multimeter set for 2.5 kV AC to the whole secondary. Apply mains power. If near zero volts, phasing is wrong - reverse one primary. If 2 to 2.2 kV AC - phasing is correct.

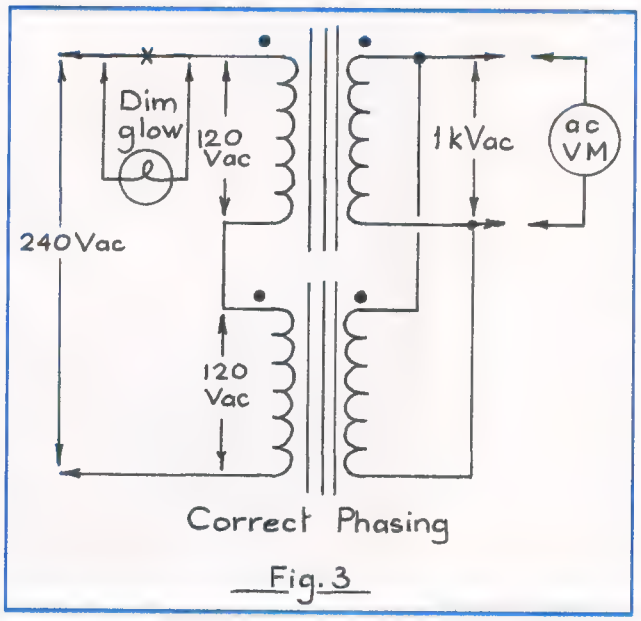

Fig. 3

Rectifier Circuit

An appropriate rectifier/filter rather depends on application. However, for a 1 kV AC primary, a full-wave diode bridge

Photo 3 - Siliconed HV wire connection.

comprising at least 3 x 1 kV PIV/3 A diodes per leg (12 diodes) is suggested. The filter capacitor may comprise 4 x 220 µF/400 or 450 V in series, with a 100 k 3 W metal-film bleeder resistor across each capacitor. No-load output will be about 1,300 V DC. At a load current of 400 mA, voltage will (typically) fall to 1100 V. Double the diode and capacitor numbers for a 2 kV ac secondary. Typical rectifier circuits may be found in References 4, 5 and particularly 6.

Primary Circuit

For either secondary configuration, the primary side should be wired in accordance with Figure 5. Include a 4 A 'slow-blow' fuse in each side of the mains supply. A slow-start circuit was found not to be necessary. All connections must be suitably covered to prevent accidental contact.

continued next page

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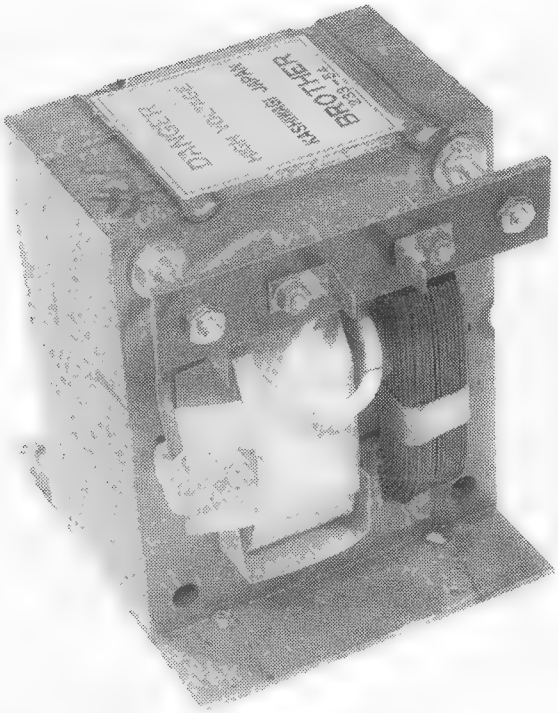

Photo 4 - Terminal strip fitted.

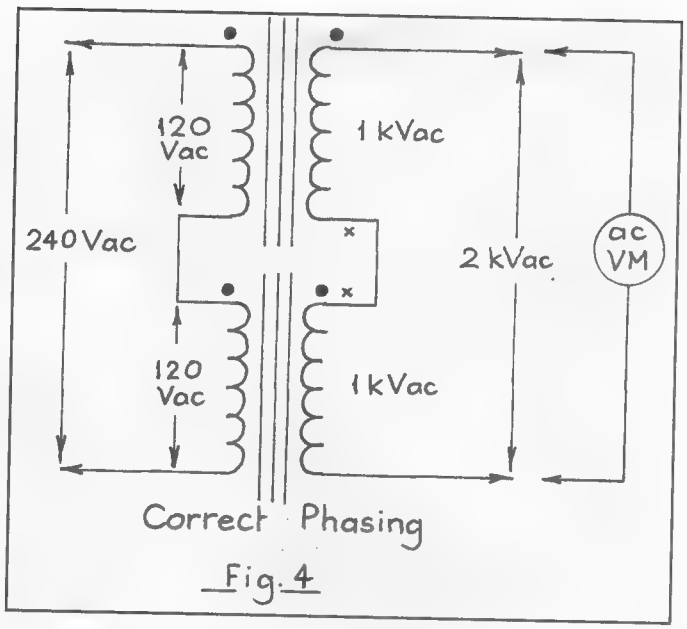

Fig. 4

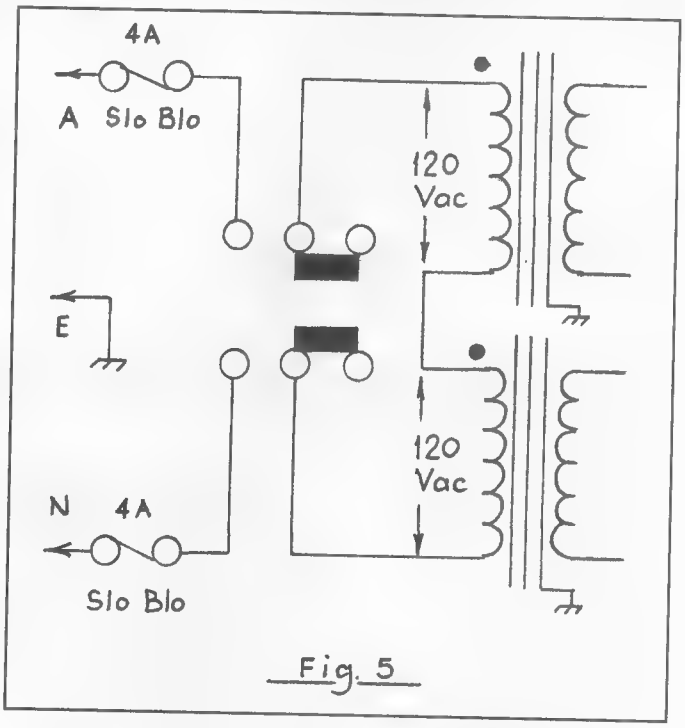

Fig. 5

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References and Further Reading

1. Microwave Oven Operation and Service Manual; R. Humphris, RMIT.
2. Radio(tron) Designer's Handbook; F. Langford-Smith, 4th Ed, Ch 5, Sec 5.
3. Coil Design and Construction Manual; Bernards Radio Manual #160, Ch 4.
4. The ARRL Handbook for Radio Amateurs (any recent Ed), Ch 11 and 13.
5. Radio Communication Handbook; RSGB, 7th Ed, Ch 15.
6. Radio Handbook; W. Orr, SAMS, 23rd Ed, Ch 19.

Photography: Andrew Diamond

VK2

Tim Mills VK2ZTM.

Members of AR-NSW are advised of a minor adjustment to the close of nominations for election to Council and for Motions and other business for the AGM on the 22nd April 2006. It will now be at noon, Saturday the 11th March 2006. Details are given in the weekly news bulletins from VK2WI.

AR-NSW will conduct the next Foundation assessment as well as exams for either the Standard or Advanced on a weekend in early April. For bookings, contact the office on 02 9689 2417 or email at vk2wi@ozemail.com.au.

This month is another round of tenders which will close off on March 10th. Check out details on www.arnsw.org.au . Collection will be available at the March T&T on Sunday the 25th.

Travelling over Easter? A reminder that the Urunga Convention is held on Easter Saturday and Sunday. Urunga is on the NSW Mid North Coast, just to the south of Coffs Harbour.

The VK2WI team has gained a couple of operators. Tony VK2ACV and Nick VK2ZNF. The second quarter roster - April to June - will be compiled soon and further help is required as a couple more have had to drop out for a while. Please consider joining the broadcast team. Contact John VK2JJV, the roster coordinator or the AR-NSW office. We need to spread the load.

The Eastern suburbs of Sydney are well served by the Waverley Amateur Radio Society which has club rooms at Rose Bay. They have a Project afternoon on the first Saturday afternoon of the month and a monthly meeting on the third Wednesday. They go back to just after the First World War and have been operational, with a few quiet periods, since then. Check out their details at www.vk2bv.org . They have an annual auction Saturday in June. They operate repeaters on 2 metres and 70 cm.

An active country club is the Oxley Region ARC at Port Macquarie. They have a monthly meeting on the first Saturday afternoon and informal gathering on the second and fourth Friday evenings. The meetings are currently held at the SES building. They operate 2 metre and 70 cm repeaters from two locations in the region. They have a field day over the long weekend in June.

Jeff VK2BYY recently wrote a science fiction novel - "Barefoot Times", which has done well. Jeff has been back on the keyboard and in a few weeks time will have his second novel released.

73 - Tim VK2ZTM.

2006 Urunga Radio Convention Inc.

It is that time of year again where we are getting organized for the 2006 *Urunga Radio Convention over the Easter Weekend 15-16 April*

The 2005 convention went off well with some new "foxes" being tried, apart from a few teething problems all went well, Domenic VK2YDD and Pat VK2BPH proved they were up to the job of being cunning and devious hiding the foxes, while Brian VK2BI was kept busy with the "kids" events, which as usual went without a hitch,

The hall was agog with the usual trading of pre-loved gear, the kitchen and lounge area were popular and well patronized, Thanks to the ladies for their hard work, the quizzes and competitions were also popular, The dinner on Saturday night was well attended.

Thanks again to Bryan Ackerly VK2YNG for his donation of 80 m O Ring foxes and the informative talk on their use.

Jack Gerard Memorial Award

Adam Scamell VK3YDF, 3 events

Brian Slarke Memorial Award

Rodney Sommerville VK2URK, Overall 2 days

Ken Golden, VK2DGT
Sec. WIA Urunga Radio Convention Inc.
ph 02 6652 3177

(Check out Urunga Radio Convention web page)

Results of the 2005 WIA Urunga Radio Convention Inc.

Saturday	
80 MHz mobile	Adam Scamell VK3YDF
2 m Pedestrian	1st. Rodney Sommerville VK2URK 2nd.Chris Williams VK2YMW
2 m Mobile	1st. Rodney Sommerville VK2URK 2nd. Chris Williams VK2YMW
Talk In Mobile	1st Rodney Sommerville VK2URK 2nd. Adam Scamell VK2YDF
Junior 80 MHz	1st. Stefan Winkler 2nd. Kelly OBrien
Sunday	
Urunga Scramble	1st. Grahame O'Brien VK2FA
40 m Fun event	1st. Chris Williams VK2YMW
2 m Mobile	1st. Adam Scamell 2nd. Rodney Sommerville VK2URK
2 m Pedestrian	1st. Chris Williams VK2YMW 2nd. Rodney Sommerville VK2URK
Talk In 2 m Pedestrian	1st Adam Scammel VK3YDF
Junior 2 m	1st. Stefan Winkler 2nd.Reece Austin

see pictures of 2005 Convention inside back cover

News from...

VK3

Amateur Radio Victoria News

Jim Linton VK3PC
Website: www.amateurradio.com.au
Email: arv@amateurradio.com.au

Special Event Callsigns

After six months of planning the time has arrived to activate the two special event callsigns AX3GAMES and AX3MCG to celebrate the Melbourne Commonwealth Games.

A roster of Amateur Radio Victoria members has been set up in the Members Only section of our website for AX3GAMES, allocating operating slots through the entire month of March. If you would like to fill any vacant slot please let the Vice President, Barry Robinson VK3JBR know immediately.

The other callsign AX3MCG (Melbourne Commonwealth Games) is being activated by David McAulay VK3EW (who ran our successful AX3OLY Olympic callsign in 2000) and Peter Forbes VK3QI who was the key operator for AX3ITU for the ITU's 140th birthday in May last year.

Commemorative QSL cards will be designed and issued for both AX3GAMES and AX3MCG.

If the popularity of the Manchester Commonwealth Games 2002 special event callsigns is any guide, the Melbourne event callsigns will be popular.

The ACMA, when granting Amateur Radio Victoria the two special event callsigns, also announced that all radio amateurs may use the substitute prefix AX during the games period 1-31 March.

About 70 nations which represent a third of the world's population take part in this major sporting event.

Education Activity Expansion

As hinted in last month's column, Amateur Radio Victoria is stepping up its role of providing amateur licence education.

Building on the four Foundation Licence and Assessment Sessions that have been held since November last, the next obvious need was to make available training for the 2nd tier Standard Licence.

The concept of a Standard Licence Bridging Course was initially formed last year and required an enormous amount of work to develop and refine. The aim is to bridge the knowledge gap for Foundation Licensees wanting to upgrade.

Our Instructor, Kevin Luxford VK3DAP, with the assistance of others worked through December, January and part of February to create a course that not only complies with the new Standard Licence syllabus, but can be delivered over four weeks.

The course began on 1 February with four candidates who attended at the Ashburton rooms weekly and then underwent further tuition during a combined training and assessment weekend session.

The outcomes of the course will be published in this column next month. It may be possible to run up to three bridging courses a year if there's sufficient demand.

After his 5th Foundation Licence training session helping 30 become new radio amateurs, Murray Lewis VK3EZM has taken leave due to a work commitment with Kevin VK3DAP taking up the weekend Foundation classes.

ar

GippsTech2005 announcement

Peter VK3KAI
Chair, Organising Committee
vk3kai@wia.org.au

The Eastern Zone Amateur Radio Club (Inc) is pleased to announce GippsTech2006. This year the event will be held on Saturday July 8 and Sunday July 9. This event has a well-recognised reputation as the premier technical conference in VK considering techniques applicable in the VHF, UHF and microwave bands, especially for weak-signal contacts. In addition to the Conference, a Partners' Tour will be conducted, together with an informal social gathering for dinner on Friday and a Conference Dinner on Saturday.

Copies of the Conference Proceedings volume from 2005 will be available for sale during this year's event. Previous years' Proceedings are available – see the web site for details.

Call for Papers

Amateurs (and others with material to contribute) are invited to submit titles and outlines for topics to be presented at GippsTech2006. Presentation slots can be brief (5 -10 minutes) through to 1 hour. Anything longer - you will need to justify!!

Presentations can be formal or informal, or display. We use a lecture theatre for the formal (& semi-formal) presentations. Displays are open during coffee/tea breaks and after lunch. Potential presenters are welcome to contact me direct for further information or to suggest a topic.

The conference is held in Churchill, about 170km east of Melbourne.

Further details can be found at the Eastern Zone Amateur Radio Club web site at:

http://www.qsl.net/vk3bez/

ar

VK7

Justin Giles-Clark VK7TW
Email: vk7tw@wia.org.au
Regional Web Site: reast.asn.au

New VK7 records set

Congratulations to Rex, VK7MO for setting some new VK7 2m and 70cm distance records. Rex on New Year's Eve set a distance of 2432.6km on both 2m and 70cm between VK7 and ZL1 with Nick ZL1IU.

2005 VK7 callback stats

The VK7 Regional News Broadcast callback stats for 2005 have been compiled and overall we have a 13% increase in callbacks. Last year also saw a record 111 callbacks on 25 September.

New north-south link

Joe, VK7JG and Brian, VK7RR have established a new 70cm link from Barren Tier to Mt Barrow. This receives on 146.700MHz, VK7RAD and retransmits on 439.950MHz. The link is on all the time and is linked into 147.000MHz, VK7RAA for the Sunday morning broadcast. Thanks to Joe and Brian for their work on this. This enables the broadcast feed from the South on VK7RAA via a reliable high quality 70cm FM link.

Foundation Forum

Mitch, VK7FMCH informed me of a newly created web forum for Foundation Licensees he has established. It's called the Australian Foundation Licence Holders Forum and can be found on the forum pages on QRZ.com. It is designed to allow foundation licence holders within VK to discuss all forms of Amateur Radio.

Tassie repeater map

Roger, VK7ARN has prepared a map of the Tasmanian amateur repeater network designed primarily for visiting amateurs. It provides repeater location, frequency, offset, access tone if needed and linking information. Echolink and IRLP links are also given. It's all on one page, in colour, and prints OK in black and white. Page is available from: http://wicen.taswireless.net/SOPs/Rpt_Map.htm

BPL interference watch

Bryan VK7KBE and yours truly have been undertaking emission measurements of BPL installations at both ends of the State. Some of these have been published on the VK7 BPL Watch Page. On a lighter note, Les, VK7LS has come up with a very good analogy of BPL. Les suggests it's the modern day version of the spark transmitter HIHI! A very apt description indeed, as most experiencing the interference level of BPL will agree! Keep writing those letters to the newspapers, politicians and the ACMA, we need to keep the pressure on.

North West Tasmania Amateur Radio Interest Group

NWTARIG held its AGM on Feb 4, and the office bearers for 2006 are: President: Tony, VK7AX, Vice President: Ross, VK7WP, Secretary: Steve, VK7EQ, Treasurer: Shirley, VK7HSC, and Executive Officer: Winston, VK7EM.

Planning is well underway for the Marconi centenary celebrations, to mark the first radio transmission from Devonport to Queenscliff in July 1906. The date has been finalised for the weekend of 15-16 July 2006.

Northern Tasmanian Amateur Radio Club

NTARC's AGM was held on Feb 8 with the following office bearers elected for 2006: President: Al, VK7AN, Vice President: Kevin, VK7KVN, Secretary: David, VK7YUM and Treasurer: VK7KRR.

Don't forget the Satellite 2006 Conference & Tradeshow on March 2 - 4 at the Inveresk Tramshed Conference Centre, Launceston.

Radio and Electronics Association of Southern Tasmania Inc.

A special mention of Gavin, VK7HGO, who is involved with the CB Emergency monitoring (TASVEC) group. Gavin took an emergency radio call from Mt Wellington where a climber had fallen. Through Gavin's quick action Police Search and Rescue were on the scene.

In January, Reg, VK7KK held another foundation licence course with 8 attendees who successfully passed. The course included 3 school students with 12 year old Sam now being the youngest VK7 foundation licensee. FL Manuals and Tutor CD's are available for purchase from McCann's Model World in Elizabeth.St. Thanks to Barry, VK7TBM, for this service. The VK7RAD-VK7RHT link is up and going and working a treat, thanks to Dave, VK7DM, and his band of repeater experimenters.

Feb 5 was REAST's AGM with 40 members attending. Office holders for 2006 are: President: Justin, VK7TW, Vice-President: Clayton, VK7ZCR, Secretary/Public Officer: Ben, VK7FBCS, Treasurer: Roger, VK7ARN, Committee Members: Rod, VK7TRF, and Brian, VK7HSB.

REAST's AGM – standing room only!

The AMSAT group in Australia

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an e-mail mailing list for breaking news and such things as software releases. Contact Graham if you wish to be placed on the mailing list.

AMSAT-Australia Echolink Net.

The net meets formally on the second Sunday of each month. Anyone with an interest in Amateur Radio Satellites is welcome to join in and take part. Graham VK5AGR acts as net controller. The net starts at 0600UTC and you can join in by connecting to the AMSAT conference server.

All communication regarding AMSAT-Australia matters can be addressed to:

AMSAT-VK,
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Graham's e-mail address is:
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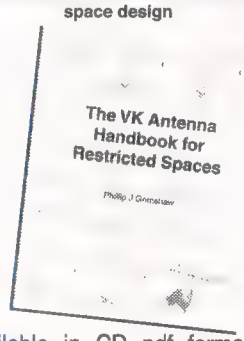

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AMSAT

Bill Magnusson VK3JT

Suitsat Saga

The Suitsat project grabbed the public imagination and was afforded an unusually high degree of publicity via NASA and the media generally, as well as in amateur radio circles. Come the day it was disappointing to find that the voice, telemetry and SSTV signals from Suitsat were almost undetectable even by well equipped amateur radio stations. Suitsat could not be heard at all using simple scanners.

It was declared a failure in the media almost immediately but in the true spirit of amateur radio, lots of antenna gain and lots of sophistication and sensitivity were brought to bear on the problem.

Over a day or two reports which were at first quite disappointing were replaced with more optimistic ones. People were hearing the signal albeit weakly. Some were able to piece together bits of the voice messages and even some telemetry was being recorded here and there. The SSTV picture was more elusive but what had been an initially gloomy situation was taking on a new life.

It was obvious after only a day or so that this was going to be a real challenge. I had decided to give it my best shot early on and had spent some weeks making certain that all was in order here. The first pass over Milawa was not until some six and a half hours after deployment. The whole episode was broadcast live by NASA on TV and the www and when the empty spacesuit was finally pushed gently away from ISS it looked like the project was going to go on to a successful conclusion with people all over the world being able to receive the signals on very simple scanning receivers. Hams were looking forward to recording the telemetry and decoding the SSTV picture, even if they didn't have Oscar capability.

Unfortunately something went amiss. When the pass was due over Milawa I had my gear all ready. The tracking antennas had recently been down for overhaul. The pre-amp had been re-installed after the EME attempt last year. The co-ax was all checked out. The auto-track and auto-Doppler system was working perfectly. Fresh keps installed that morning. I even had the MMSSTV program running on my laptop computer. Maximum strength S-9+60 dB signals had been received from the ISS packet system during the trial period.

Sadly very little was heard from Suitsat on the first pass. Certainly nothing intelligible. Maybe a very slight rise in the noise level indicating something not quite breaking the squelch occasionally and the slightest hint of a voice. The AMSAT-BB exploded with hundreds of reports, mostly coinciding with my own experience. One or two came from people who had EME capable arrays and several of these were pressed into service. You would think they'd make the job easy but EME arrays are designed to track one very slowly moving object, the moon. They have great difficulty in tracking a fast moving object like Suitsat.

Despite this problem one or two managed to follow it long enough and signals were strong but getting continuous usable data proved difficult for them too due to "deep fades".

All in all it didn't auger well. Since there was no string attached to Suitsat when it was launched, the only way out seemed to be to configure the transceiver on ISS as a cross band repeater to receive Suitsat's 2 m signal and re-broadcast it on 70 cm. Presumably the 2 m signal would be quite strong at the ISS receiver, at least for a couple of days. The astronauts were asked to check out this possibility.

Reports came in that the cross band repeater was configured on Sunday 5th February. Someone had obviously been able to pull some strings at NASA. After all, with all the publicity, they had a stake in this experiment too.

In the meantime my friend Heinz VK3BEW had been doing some work with the Spectran program to display Suitsat's FM carrier. Spectran is capable of digging very weak signals out of the noise level and is often used in conjunction with the WSJT moon bounce and weak signal software. Initial tests were surprising. Even on his first try the display showed strong traces plotting out the classic Doppler shift curve. There was no mistaking it. Suitsat

was easily detectable even on a simple ground plane antenna without a pre-amp. I tried it too and, using my tracking antennas, Spectran was displaying the carrier tens of dB above its noise floor with the 2 m receiver in SSB mode. You could plainly see the FM sidebands on the waterfall display yet switching to FM resulted in only the occasional word or two being copied. Even in its weakened condition Suitsat would have been 100% readable if it had used SSB rather than FM modulation.

We eagerly awaited the first Monday afternoon pass. The 70 cm ISS frequency was silent. The same thing was observed on subsequent passes on the Monday afternoon and evening. There were no reception reports of the 70 cm signal on the BB but the ISS fan-club site contained reports from several operators who had received bursts of 1200 baud packet on 70 cm. These obviously were coming from automated packet stations on 145.990 MHz.

Despite many appeals being made in the run-up to the Suitsat experiment for owners of automated packet stations to turn off their TNCs, these appeals had gone unnoticed or been ignored.

On the third pass of the day I began to hear strong bursts of 1200 baud packet on 70 cm. The repeater was at least working. The strong packet bursts were triggering the repeater on and off. At the same time I was receiving the 145.99 MHz signal from Suitsat yet that signal was not being repeated. That could mean only one thing. The signal from Suitsat to ISS was simply not strong enough to open the squelch so the repeater wasn't repeating anything except the packets. It looked like Suitsat had drifted too far away from ISS for strong signals to be picked up. It was leading ISS by about 200 km on the morning of 6 February but still in range of ISS. Its height had not dropped significantly below ISS. The cross band repeater had offered a reprieve and the possibility of strong signals from Suitsat but sadly that wasn't going to happen.

Looking back it was a very enjoyable learning exercise even though hard results were thin on the ground. It would have been nice to receive the SSTV picture. It would have been nice to hear the voices of the children loud and clear and of course the telemetry would have told us a lot more about what was happening on Suitsat. By the time you read this Suitsat-1 will have re-entered the atmosphere and burned up. But as Bill McArthur said, "There are plenty more redundant suits up here" so I feel sure we can look forward to more Suitsat experiments from ISS and the lessons learned from this one will certainly be applied in future.

continued next page

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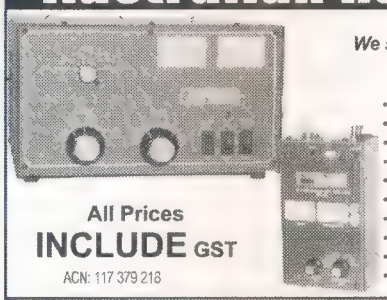

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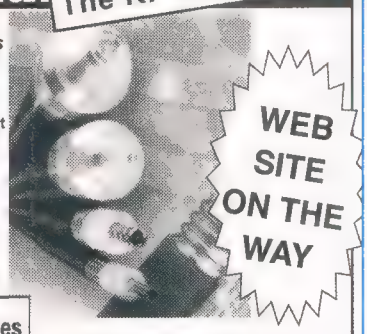

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Latest news on KiwiSat.

The latest update from KiwiSAT Project Leader Fred Kennedy, ZL1BYP, has been well received. 2005 has seen concentrated efforts in 3 areas, the U/V Linear Transponder, the Integrated Housekeeping Unit (IHU) and the Attitude Determination and Control (ADAC) system. Fred's report is available by visiting the AMSAT-ZL web site.

It features many excellent pictures of the equipment at present under construction, under test or completed. Everyone associated with the project is to be congratulated on the obvious progress so far. This report is definitely worth reading.

Bill McArthur KC5ACR on the ISS

Bill McArthur has provided ISS fans with great opportunities to work ISS on the amateur radio bands. He is a very enthusiastic amateur radio operator. The ISS Fan Club maintains a web site at http://www.issfanclub.com/ and this is the most current source of information if you are interested in contacting Bill or working the various packet configurations on ISS.

AO-7 enters a no-eclipse period

Now is the opportunity to work some satellite DX and sharpen up your SSB transponder skills for P3E. AO-7 is performing very well and some astounding contacts are being made via this, the oldest operating amateur radio satellite. The regression of the orbit continues and AO-7 is now orbiting more or less along the grey-line and it should remain in permanent sunlight for some months. That in turn means that it can be expected to switch regularly from mode-A to mode-B each day at approximately 0900 UTC. The 24 hour timer seems to be working reliably. AO-7 is definitely a QRP satellite. Start by using minimum uplink power and try an omni-directional antenna or a simple 3 or 4 element Yagi. When AO-7 was first launched back in 1974 the usual mode-A station configuration was 10 W into a ground plane for uplink and a full-wave loop for downlink on 29 MHz. My loop was indoors, strung around the picture rails and door tops. The copper wire ground plane was built around an SO-239 co-ax socket and attached with cord to a chimney top. Orbiting at a height of 1450 km, the footprint of AO-7 is huge. It covers all of Australia and New Zealand and the islands to our north at the same time. AO-7 is a great old timer and it's always a pleasure to hear the voice come back through circuits which in satellite technology terms are almost ancient.

Proposed new launches for 2006

2006 looks like being a bumper year for amateur radio satellite launches. No fewer than 15 new satellites are listed as being under development and having proposed launch dates this year. A number of cubesats are listed for a multiple launch in mid-May. With the excitement of the Suitsat project and the approaching launch of Phase3E, 2006 is shaping up as a year to be remembered.

New Release of SatPC32

Do you use an FT-847 trx for satellite work? They were and are a very popular rig here in VK. Or maybe you have one of the new 450 degree rotators.

Erich Eichmann DK1TB has released SatPC32 version 12.4a. The earlier versions of this software have been well received by many operators. The changes in this version are of interest mainly to users of the Yaesu FT-847 transceiver or the newer models of the G-5500 rotator. Many newer rotators have 450 degree rotation to allow interruption-free tracking of the satellite passes which "cross the stop" during their pass over your QTH.

A lot of people have problems running their co-ax to allow auto-flip so SatPC32's ability to cope with the full 450 degrees rotation of the newer rotators will please many operators.

Larger 3D maps are also available for the new version. The program now includes support for the Yaesu FT-847 when used with in-band satellite repeaters like that on ISS. The number of selectable com ports is increased.

The demo version is fully functional except that the user must enter latitude and longitude every time the program is started. It can be made fully functional by purchasing a registration code from AMSAT-NA, AMSAT-UK, or AMSAT-DL. Why register? Erick has donated this software as a fundraiser for AMSAT so your registration will help future satellite building. The demo version can be downloaded from the author's web site at:
http://www.dk1tb.de/indexeng.htm

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Awards

Malcolm K. Johnson VK6LC
WIA Awards Manager.

Formal Awards title change from "RTTY" to"Digital"

The WIA Awards program has officially updated all of its awards to reflect "Digital" where it represents an "Award Title" or a "Group Title" only.

We have made this change keeping pace with the expanding world of Digital Data Communications.

At present Digital does not fit in all cases to the "RTTY" title category. Certificates will be titled "Digital" and endorsed with the appropriate awarded "Data Mode".Digital will represent all data transmitted modes for our awards and details are below:

Award Modes

Open
(combined Phone, CW & Digital)

Digital
RTTY (BAUDOT, ASCII, AMTOR, PACKET, PACKTOR, FSK, PSK, BPSK, MFSK, MT, AFSK, etc) including Digital (narrow band FSK).

ar

Christine Taylor VK5CTY

The Foundation Licence explosion

As most amateurs will have realised by now, the introduction of the Foundation Licence into our world has created a large number of new licensees to appear on the scene and on the air. Isn't it great?

As far as ALARA is concerned we are delighted that in almost every Foundation Licence class there are one or two (or even more) YL applicants. What is more they are beginning to appear on the air waves already.

The Monday night Net on 3.5800 +/- has had the first YL F-call join in the chat. On Monday 23rd January Lia, VK3FLIA called in and was welcomed by us all. Lia has an OM who has had a licence for some time, but was delighted to tell us that her daughter and grandson also sat for and passed their Foundation Licence exam at the same time as she did, in Bendigo. Well done to them all. I hope they enjoy amateur radio as much as we have done over the years.

State reps please take note

With so many new amateurs appearing everywhere, we are asking our State Reps to keep an ear on happenings so we can invite all the new YL amateurs to join ALARA. I am sure they will find the comradeship of the 'oldies' encouraging for the 'newies'.

New amateurs can feel isolated once the first thrill has worn off, as we know so let us all help to welcome all the new voices,

Please note, YLs, you do not have to be a member of ALARA to join in the Monday night Nets. In fact we welcome OMs to join in, as well. We just ask that you wait for the first round or so to finish before you join us. You will find our where we all live and hear something about our activities as we go round. We all save stories of the most interesting things to happen to us during the week, to share with each other. I understand we have quite a number of eaves-droppers who enjoy our stories each week, already.

ALARA's special Foundation licensees

ALARA's first President, Norma, now VK2YL, is proud to report that her THREE daughters, Christine, Michelle and Lorraine all sat and passed the Foundation exam held in January (at a Pizzeria) in Baulkam Hills. That makes five amateurs in their family, Norma's mother-in-law Bobbie VK2PXS and her OM, Frank VK2AKJ are also amateurs.

To add pleasure to the story, Peter, son of the ALARA editor, Dot VK2DB, and her OM John, VK2ZOI, was in the same class and also passed. Peter was planning to apply for the callsign VK2FOOL, very appropriate, according to Dot.

Our congratulations to these ALARA family members, in particular.

Norma VK2YL's daughters with Dot VK2DB's son Peter at their Foundation Licence exam.

We also welcome into the ALARA family several other new F-calls. In December, the youngest F licensee, at that time, Janice VK3FIRE, became a member of ALARA as soon as she passed her test. Janice is 9 years old. Janice featured in the January/February issue of AR magazine. For Christmas presents, she gave three of her uncles copies of the Foundation Licence Manual. Warning!

The Morsecodians at Tamworth

The Morsecodians have been mentioned several times previously in this column, so it was interesting to hear that they were at the Tamworth Country Music Festival this year.

To add interest to the story, it appears that they were running a program that allowed them to accept messages from the public, to send the messages by Morse Code and to have the messages translated into SMS messages that could be received on a mobile phone.

Someone has combined an old technology with a new one in a very innovative way. Never say there is nothing new in amateur radio.

Well done, Morsecodians!!

The International YL Meet in Mumbai

A message from Sarla VU2SWS tells us that between 55 and 60 YLs will be attending the MEET later this year. We wish them all great weather and good company. The planned program sounds most interesting with a chance to see something of Mumbai and time for eyeballs as well.

Sarla also tells us she has gained her DXCC. That takes a lot of time and effort. Our congratulations to Sarla.

YL contests coming up soon

The CLARA and Family HF Contest will be on 18 and 19 March. It commences at 1700Z and runs for the 24 hours on all the HF bands. You may use CW or Phone and OMs as well as YLs are welcome.

On the 1 and 2 April from 0800Z to 1000Z on the Saturday and the Sunday the Thelma Souper Contest will be run by the WARO, (ZL YLs) on 80 metres only but using both CW and Phone.

In both contests there will be extra points for contacting a YL and in the WARO Contest there will again be a bonus station operating at different times and on different bands.

Like the ALARA Contest, these contests are laid back, with time for a chat as well as an exchange of numbers. Please join in, you are all welcome.

ar

Beyond our shores

David A. Pilley VK2AYD
vk2ayd@wia.org.au

There is very little happening on the international scene. The HF bands have been 'dead' most days so I thought perhaps a look at some of the digital systems may be appropriate.

Digital

An article in an ARNewsline reported that Sony Europe has announced it is to cease selling analogue-only television sets, and sell only integrated digital televisions. These sets include both analogue and digital terrestrial television tuners. As Australia uses the same PAL system I wonder how long it will be before this has an effect here. Latest news says the USA has passed a law effective from 31 Dec 2008 that all TV broadcasters will switch to all-digital mode. It was also voted to put aside $US830 million to help those with analog TVs to convert. We hope our government will make a similar provision when the time comes.

After nearly 60 years as a radio amateur I still get a big kick out of trying out new communications technologies. Back in the 50s when we were building phasing and crystal lattice SSB rigs, everyone said 'Donald Duck' will never take off! Having tried most digital keyboard communications on the HF bands (fascinated with PSK31 – try it!), I was recently taken with a new digital voice unit advertised.

Using digital technology to transfer pictures is great on HF. You have hand-shaking with the receiving station and, with a little patience, you eventually have a perfect picture. However, there is no hand-shaking with digital voice. It's a one way system. It works excellently when the signal is S-9+, but as soon as the signal drops and QRM/QRN/QSB joins in, there's a problem. Digital voice technology appears to work well in VHF and above where signals are S-9, but there is still a lot to be learnt on HF.

Talking of VHF and above, the latest from the ARRL is a system called 'D-Star'. In the USA repeater sites are being established on 1.2 GHz. Commercial equipment supplied by Icom is capable of up to 128kbps. (I thought some computer wireless communications had this capability years ago). How this will progress amateur radio communications is going to be interesting.

In Tempe Arizona they have decided not to use BPL but to blanket the entire city with Wi-Fi for its 160,000 residents. They say this will mean approximately 400 antennas for the system. Relay boxes will be mounted on light poles throughout the city to stitch together the network. Imagine the reaction from certain shire councils here who are objecting to simple vertical antennas.

VoIP and RCoIP

As technology advances VoIP is becoming very popular around the world. At last it has given those restricted with little possibility of using HF, to contact other amateurs around the world. In February "QST" there was an interesting article by Carl Ferguson, W4UOA, on Remote Control over the Internet. An interesting concept for those wanting to run their home station from a hotel room or vacation cottage! It uses a program called "TRX Manager" in association with "NetMeeting" or "Skype".

Where will technology take us next? Let us hope that authorities do not forget that it is the amateur that is often the forerunner of new technologies, and he needs to be given some freedom to develop ideas.

A new group in the UK has appeared promoting IRLP (Internet Radio Linking Project). This was originally pioneered by Dave Cameron VE7LTD, to link amateur radio repeater systems and radio gateway nodes together. It is a little different from most systems as the only means of access is by radio linking.

Bandwidth

The ARRL recently presented a petition to the FCC to segment the amateur bands by emission bandwidth rather than mode. The petition pointed out that the current licence is a remnant of times gone by when only Morse telegraphy, single sideband, double sideband and amplitude modulation were in fashion. The petition is needed to bring amateur radio into the new millennium, especially with the advancement of digital technology. It was interesting to read in RSGB Band Plan the January *RadCom* was already referring to bandwidth and not mode; for example, Telegraphy had a maximum bandwidth of 200 Hz on HF and All Modes shown as 2700 Hz.

Ultra Wide Band

UK concerned about UWB impact on ham radio

This is a wireless version of the USB technology used to connect devices such as mice and keyboards to computers.

UWB is unlike other radio technologies in that it generates short pulses made up of lots of frequencies, rather than modulating a signal on a particular carrier frequency. Known as carrier-free radio, it allows massive amounts of information to be transferred quickly. However, there are serious concerns the technology could threaten the amateur microwave bands, especially if used outdoors as an alternative to wireless network technologies like Wi-Fi.

In the response, the RSGB and its partners wrote: *We recognize that UWB short-range links will have a useful role and observe that UWB vendors are exerting considerable pressure for UWB's adoption. We stress that UWB must fully comply with the International Radio Regulations and that all such devices must operate on a non-protected, non-interference basis.*

The RSGB and its partners are therefore calling for the technology to include masking to protect the amateur bands. *In order to protect our services (notably in the 3.40-3.41 GHz band) we urge the adoption of the mask proposals without due concession to UWB proponents,* they wrote in their response.

(ARNewsline)

500 kHz

The Maritime Radio Historical Society (USA) is seeking to have the 500 kHz band designated as an international memorial frequency. The idea is that museums and historical initiatives would be issued with coast station licences specifically for this band.

ar

DX: News & Views

John VK4OQ,
P.O. Box 7665, Toowoomba Mail Centre, QLD 4352.
Email: john.bazley@bigpond.com

On 27th January as I write this, I and other VKs, have been trying to work the CE0Z. It has been hard to hear him let alone work him. Let's hope the signals from 3Y will be better!

We will see more amateur activity from Andaman and Nicobar Islands in April, thanks to NIAR.

Amateur radio organisations, DX forums, and individuals lobbied NIAR for a suitable event to highlight the benefits of amateur radio technologies for social and scientific development.

NIAR then proposed to the Government of India that an International Convention of Amateur Radio Operators, "HAMFEST (VU4) INDIA–2006", be held at Port Blair, Andaman and Nicobar Islands April 18-20, 2006. So we can expect some operating from there in April.

Australia's Macquarie Island (VK0/M) may soon be 'basically vacated'. That is indeed bad news. After mid 2007 only a small core of meteorologists will staff the outpost. The good news is Australia's Antarctic Division will then concentrate major sub-Antarctic research on Heard Island (VKØ/H). Macquarie Island has from 20 to 40 scientists each season. "Macca" has been the main scientific base for Antarctic scientists for over 50 years. "Our work on climate change is much better served by our work on Heard Island", says Professor Michael Stoddart, an Antarctic Division chief scientist.

The ARRL LOTW web site, was down for 3 1/2 days for maintenance towards the end of January, and now supports the Worked All States (WAS) award.

The DXCC award has been supported for a year, but WAS has been "work in progress" until January. You may now apply for a "WAS account" and have your existing QSOs credited to it based on rules you specify. No WAS certificates or award credits on the LOTW site yet but you can see which of your QSOs qualify. WO5I, David Black, notes the ARRL has not yet announced this available feature change on the main League web page. KE3Z says, on the LOTW web page, though, *January 16, 2006: Preliminary WAS support added. The first stage of LOTW upgrades to support the ARRL Worked All States (WAS) award has been completed. Under the Awards menu, you can add one or more WAS account to select credits for the WAS award. Applications for WAS via LOTW are not presently being accepted, but this feature is expected to be available by the end of February.*

DXCC news: D2DX from Angola (current operation as of 15 December 2004) and KH9/W0CN from Wake Island (17-28 September 2005) have been approved for DXCC credit.

So what have we got to look forward to in the coming weeks?

VP2V/G6AY will be on from the British Virgin Islands February 23-March 1. Ops G3RTE, Jim, and G3SWH, Phil, will concentrate on CW, 80-10 m, with some SSB and possibly some 160 m CW. With two 100-watt stations they will be on the air as much as possible. QSL via G3SWH with a stamped SAE, via email or the bureau for a bureau card in return.

FT - Gildas TU5KG is back to the Southern Indian Ocean on a fishing boat. Between 15 January and 3 February he will be sailing in the Kerguelen area, then in the Crozet area until early March, and back to Kerguelen until the end of March. When on land, he expects to operate as FT5XP from Kerguelen and as (probably) FT5WK from Crozet.

The ***T30DX operation*** has been cancelled, because the OH Pacific DX Team (http://www.ohpacificdx.com) has not been successful in securing flights to and from Western Kiribati. "However, the effort put in by the team and all of you supporting us will not be wasted", they say. *We are already preparing a fresh new start to get back to Pacific before Christmas 2006.* Details will be announced in due course.

Do not waste time on ***5T5T*** (spotted on 20 and 40 metres CW, 20m RTTY). Maurice, F5NQL reports that the QSL manager's callsign (F5DIF) has not been issued to anyone, while Jean 5T0JL says that the only two other operators licensed are Feng Wang 5T0WF (ON6WFO, in Mauritania until 15 January) and Nicolas/5T5SN (plus 5T5BN, Bernard, pending). Another licence will soon be issued to Fernando, EA1BT.

Visalia 2006. The Southern California DX Club (http://www.scdxc.org/) sponsors the 57th annual International DX Convention to be held at the Holiday Inn Hotel & Conference Centre, Visalia on 21-23 April. Information at http://www.dxconvention.org/

F5NRY, Christian Quintin, is currently on a 2-3 year work assignment in the Central African Republic and QRV as TL8QC. Look for activity on 15, 17, 20 and 40 metres on CW only. QSL via his home call F5NRY. QRX for exact address as there are at least three different addresses out there.

F4BQO, Claude, is active as TR8FC from Libreville, Gabon now until May 2006. Look for activity on 14190 on SSB starting around 1800Z. Also watch 21020 and 24900 on CW. If you want a sked email him at b4bqo@orange.fr. QSL via F4BQO, either direct to Claude Franck, 56 rue de la Treille, 95490 Vaureal, FRANCE or via the bureau.

K3LA, Barney, is in Khartoum, Sudan with a licence to operate as ST2LA. He took a brand new Icom IC7000 with him and will be on the air from locations with installed antennas. QSL via K3LA.

OE3JAG, Karl, reports to *The Daily DX* he will be QRV from the Madeira Islands (AF-014) as CT3/OE3JAG from 15 to 22 May. Plans are to run QRP with a dipole or long wire, mainly on CW, PSK and RTTY on 20 and 30 metres. QSL via OE3JAG. See info at http://www.qrz.com and http://www.oe3jag.com.

TY– Ronald/PA3EWP, Andrea/IK1PMR, Claudia/K2LEO and Tom/GM4FDM, all of T33C fame, will operate from Benin on 15-20 March. Requested calls are TY5WP, TY1MR, TY2LEO and TY4TW respectively. They hope to be active on 160-10 metres all modes, with 100 watts and maybe a linear using verticals and wires from a near beach location. Expect some activity during the BARTG RTTY Contest and maybe the WPX SSB Contest. QSL TY1MR and TY2LEO via IK1PMR, TY5WP via PA7FM and TY4TW via GM4FDM.

Thanks to *The Daily DX* (W3UR) and *425 Dx News* (I1JQJ) and *QTC DX PY2AA* for information appearing in this month's *DX News & Views*.

You can obtain from W3UR a free two week trial from www.dailydx.com /order.htm

Gridsquare Standings at 3 February 2006

Guy VK2KU

1442 MHz Terrestrial

VK2FLR	Mike	113
VK3NX	Charlie	104
VK2KU	Guy	102
VK3KAI	Peter	81
VK2ZAB	Gordon	78 SSB
VK2KU	Guy	69 SSB
VK3CY	Des	68
VK3PY	Chas	68 SSB
VK3HZ	David	65
VK2DVZ	Ross	63 SSB
VK2TK	John	62
VK3EK	Rob	62 SSB
VK3QM	David	56 SSB
VK2EI	Neil	54
VK3TMP	Max	53
VK7MO	Rex	53
VK3BJM	Barry	52 SSB
VK3ZLS	Les	51 SSB
VK3BDL	Mike	50
VK3KAI	Peter	48 SSB
VK2DXE	Alan	47
VK2KU	Guy	47 Digi
VK3WRE	Ralph	46 SSB
VK4TZL	Glenn	45
VK2DXE	Alan	43 SSB
VK3CAT	Tony	40
VK3KEG	Trevor	39
VK3KAI	Peter	36 Digi
VK2TK	John	35 SSB
VK4KZR	Rod	35
VK7MO	Rex	35 Digi
VK3ZUX	Denis	33 SSB
VK6HK	Don	33
VK7MO	Rex	33 SSB
VK3ZYC	Jim	31
VK4CDI	Phil	29
VK2KRR	Leigh	28 FM
VK3KME	Chris	28 SSB
VK4CDI	Phil	28 SSB
VK2TK	John	27 Digi
VK2EAH	Andy	26
VK4DFE	Chris	26 SSB
VK5ACY	Bill	26 SSB
VK2TG	Bob	25 SSB
VK3BBB	Brian	25
ZL3TY	Bob	24
VK3DMW	Ken	23
VK3YB	Phil	23
VK3HV	George	21 SSB
VK1WJ	Waldis	20
VK3TLW	Mark	20 SSB
VK6KZ	Wally	20
VK3AL	Alan	18 SSB
VK3BG	Ed	17 SSB
VK6KZ/p	Wally	16
VK1WJ	Waldis	15 Digi
VK2EAH	Andy	15 SSB
VK3ZYC	Jim	14 SSB
VK2CZ	David	12
VK7ZSJ	Steve	12
VK2EAH	Andy	11 Digi
VK2EI	Neil	11 Digi
VK3UDX	Geoff	11 SSB
VK2DXE/p	Alan	10
VK3ANP	David	10
VK6DXI	Mirek	6
VK6HK	Don	6 Digi
VK1WJ	Waldis	5 SSB
VK2TWO	Andrew	5
VK3ZDR	David	5 SSB
VK2AKR	Neil	3 Digi
VK2DXE	Alan	3 Digi
VK4TJ	John	3 SSB
VK1WJ	Waldis	2 CW
VK2AKR	Neil	1 SSB
VK3QM	David	1 Digi
VK4CDI	Phil	1 Digi

144 MHz EME

ZL3TY	Bob	190
VK2KU	Guy	189
VK2KU	Guy	171 Digi
VK7MO	Rex	153 Digi
VK2FLR	Mike	114
VK3CY	Des	70
VK2KU	Guy	39 CW
VK2KRR	Leigh	30
VK4CDI	Phil	16
VK3HZ	David	14
VK3KEG	Trevor	4
VK3NX	Charlie	4
VK2DVZ	Ross	2
VK2DXE	Alan	2

432 MHz Terrestrial

VK2ZAB	Gordon	57 SSB
VK3PY	Chas	50 SSB
VK3NX	Charlie	47
VK3QM	David	47 SSB
VK3ZLS	Les	40 SSB
VK2KU	Guy	38
VK2KU	Guy	34 SSB
VK3EK	Rob	34 SSB
VK3HZ	David	34
VK2DVZ	Ross	32 SSB
VK3BJM	Barry	32 SSB
VK3CY	Des	32
VK3KAI	Peter	29
VK3KAI	Peter	28 SSB
VK3BDL	Mike	27
VK3WRE	Ralph	26 SSB
VK3TMP	Max	25
VK3KEG	Trevor	21
VK2TK	John	18
VK7MO	Rex	18
VK2TK	John	17 SSB
VK3CAT	Tony	16
VK3ZUX	Denis	15 SSB
VK3BG	Ed	14 SSB
VK4KZR	Rod	14
VK3TLW	Mark	13 SSB
VK4TZL	Glenn	13
VK6KZ	Wally	13
VK2KRR	Leigh	11 FM
VK3AL	Alan	10 SSB
VK3ANP	David	10
VK3UDX	Geoff	10 SSB
VK3YB	Phil	10
VK2TG	Bob	9 SSB
VK3BBB	Brian	9
VK4DFE	Chris	9 SSB
VK3KME	Chris	8 SSB
VK4CDI	Phil	8
VK6KZ/p	Wally	8
VK2FLR	Mike	6
VK6DXI	Mirek	6
VK7MO	Rex	6 Digi
VK2KU	Guy	5 Digi
VK3HV	George	5 SSB
VK3KAI	Peter	4 Digi
VK3PY	Chas	4 Digi
VK3QM	David	4 Digi
VK3ZYC	Jim	4 SSB
VK1WJ	Waldis	3 SSB
VK2CZ	David	3
VK2TWO	Andrew	3
VK2DXE/p	Alan	2
VK3DMW	Ken	2
VK4TJ	John	2 SSB
VK2AKR	Neil	1 SSB
VK2TK	John	1 Digi

432 MHz EME

VK4KAZ	Allan	14 CW
VK7MO	Rex	6
VK3NX	Charlie	5
VK7MO	Rex	5 Digi
VK3HZ	David	3
VK2KRR	Leigh	1

1296 MHz

VK3QM	David	35 SSB
VK3PY	Chas	34 SSB
VK3NX	Charlie	32
VK2ZAB	Gordon	29 SSB
VK3ZLS	Les	26 SSB
VK2KU	Guy	25
VK2KU	Guy	22 SSB
VK3EK	Rob	20 SSB
VK3KAI	Peter	20
VK3KAI	Peter	19 SSB
VK3KWA	John	19
VK2DVZ	Ross	17 SSB
VK3WRE	Ralph	16 SSB
VK3BDL	Mike	12
VK3BJM	Barry	12 SSB
VK3HZ	David	11
VK3TMP	Max	11
VK2TK	John	10 SSB
VK4KZR	Rod	10
VK7MO	Rex	10
VK3BG	Ed	8 SSB
VK3TLW	Mark	8 SSB
VK3AL	Alan	7 SSB
VK4TZL	Glenn	6
VK2CZ	David	5
VK3HV	George	5 SSB
VK3UDX	Geoff	5 SSB
VK3ZUX	Denis	5 SSB
VK3ZYC	Jim	5
VK6KZ/p	Wally	5
VK2KRR	Leigh	4
VK3BVP	Shane	4
VK3YB	Phil	4
VK3ZYC	Jim	4 SSB
VK6KZ	Wally	4
VK2KU	Guy	3 Digi
VK3BBB	Brian	3
VK3KEG	Trevor	3
VK6DXI	Mirek	3
VK2DXE/p	Alan	2
VK2FLR	Mike	2
VK3CY	Des	2
VK3KAI	Peter	2 Digi
VK3KME	Chris	2 SSB
VK3QM	David	2 Digi
VK4TJ	John	2 SSB
VK3DMW	Ken	1
VK3ZYC	Jim	1 Digi
VK7MO	Rex	1 Digi

1296 MHz EME

VK7MO	Rex	4 Digi

2.4 GHz

VK3PY	Chas	12 SSB
VK3QM	David	12 SSB
VK3NX	Charlie	9
VK3WRE	Ralph	9 SSB
VK3KAI	Peter	7 SSB
VK3EK	Rob	5 SSB
VK3HV	George	4 SSB
VK6KZ	Wally	4
VK3BJM	Barry	3 SSB
VK3HZ	David	2
VK3KAI	Peter	2 Digi
VK4KZR	Rod	2
VK3BG	Ed	1 SSB
VK3TLW	Mark	1 SSB
VK3ZUX	Denis	1 SSB
VK4TZL	Glenn	1

3.4 GHz

VK3NX	Charlie	9
VK3KAI	Peter	6 SSB
VK3QM	David	6 SSB
VK3WRE	Ralph	6 SSB
VK3HV	George	4 SSB
VK6KZ	Wally	4
VK3EK	Rob	3 SSB

5.7 GHz

VK3NX	Charlie	11
VK3WRE	Ralph	9 SSB
VK3KAI	Peter	7 SSB
VK3QM	David	7 SSB
VK6KZ	Wally	4
VK3BJM	Barry	2 SSB
VK3EK	Rob	2
VK3HV	George	2 SSB
VK3KAI	Peter	2 Digi
VK6BHT	Neil	2 SSB
VK3ZUX	Denis	1 SSB

10GHz

VK3NX	Charlie	10
VK3QM	David	10 SSB
VK3KAI	Peter	9 SSB
VK6BHT	Neil	9 SSB
VK3WRE	Ralph	8 SSB
VK3PY	Chas	7 SSB
VK3EK	Rob	5 SSB
VK6KZ	Wally	5
VK3HV	George	4 SSB
VK3TLW	Mark	3 SSB
VK3ZYC	Jim	3 SSB
VK5ACY	Bill	3 SSB
VK2EI	Neil	2 SSB
VK3BJM	Barry	2 SSB
VK3DMW	Ken	2
VK3ZUX	Denis	2 SSB
VK7MO	Rex	2
VK3BG	Ed	1 SSB
VK3HZ	David	1
VK4KZR	Rod	1
VK4TZL	Glenn	1

24GHz

VK6BHT	Neil	3 SSB
VK2EI	Neil	2 SSB
VK3NX	Charlie	2
VK6KZ	Wally	2

474THz

VK7MO	Rex	1

Additions, updates and requests for the guidelines to Guy VK2KU, vk2ku@tsn.cc, or by mail (QTHR 2005).

The guidelines (and the latest League Table) are also available on the website of the NSW VHF Dx Group at www.vhfdx.radiocorner.net - click on Gridsquares.

Next update of this table will be in mid May 2006.

Stations who do not confirm their status for more than 12 months may be dropped from the table.

ar

NEW CONTEST

QRP Hours

Saturday, 8 April

Contests

Ian Godsil VK3JS

Contest Calendar March – May 2006

March	4/5	ARRL Intl. DX Contest	(SSB)
	11/12	RSGB Commonwealth Contest	(CW)
	18/19	John Moyle Memorial Field Day	(CW/SSB/FM)
	18/19	Russian DX Contest	(CW/SSB)
	25/26	CQ WW DX Contest	(SSB)
April	1/2	Marconi Contest	(CW/SSB/RTTY)
	1/2	SP DX Contest	(CW/SSB)
	1/2	EA WW RTTY Contest	
	8	QRP Hours	(CW/PSK31/RTTY/SSB)
	8/9	Japan Intl. DX Contest	(CW)
	16	Holyland DX Contest	(CW/SSB)
	15	TARA Skirmish Digital Prefix Contest	(PSK)
	22	Harry Angel Sprint	(CW/SSB)
	22/23	SP DX RTTY Contest	
	22/23	Helvetia Contest	(CW/SSB)
May	6/7	CQ-M Intl. DX Contest	(CW/SSB/RTTY)
	13	VK/trans-Tasman 80 Metres Phone Contest	
	20/21	Baltic Contest	(CW/SSB)
	27/28	CQ WW WPX Contest	(CW)
	27	VK/trans-Tasman 80m CW Contest	

Greetings to all Readers.

Revised dates

In the December 2005 column I listed the dates of VK Contests for 2006. At the time I did not have certain dates available, so below I have amended the list. Please note a few changes, especially in the VK/trans-Tasman Contests dates, and some additions from the QRP Club. I know that 27th May date conflicts with one of the big international contests, but I am sure there will be plenty of room on 80 metres for our local event.

John Moyle Memorial Field Day

This annual event in March is proving very popular, not only as a field day event, but with home stations as well. The rules were published last month, so I hope that you are all getting your stations ready. Please note the revision in 2 m and above scoring.

May I also remind you that Alan VK4SN has a logging program for this contest. It is a good program, but be warned that it uses MS Access as found in Office XP. If this is a problem in the field, then entries may be made from rough sheets after the contest. Contact Alan via email on ax4sn@austarnet.com.au.

I urge everyone to become involved in this event, even the newcomers to our bands. Contesting is not difficult and need not be a "pressure" thing that can be associated with international contests. Please read the rules carefully and don't be afraid to seek help if you are still not sure of what to do.

Something new

The term "QRP" conjures up various things to various people. For most of us it means a maximum output power of five (5) watts of carrier and it has tended to be used for CW mode. When you think about it, though, this definition fits any hand-held transceiver or transmitter where the power has been turned down.

The CW Operators' QRP Club has decided to try two QRP events in 2006 – to be called "QRP Hours". The Club hopes that all its Members will take part, but also invites all amateurs to join in.

The first of these will be on Saturday, 8th April, for just two hours, with each separate hour being devoted to different modes. If anyone wants to take part in both hours, please feel free to do so! The rules are below, so please add this date to your diary. This is a simple, basic contest where everyone can make contacts and benefit from the experience.

Harry Angel

Finally, a reminder that the Harry Angel Sprint will again be held on the Saturday night prior to ANZAC DAY. In 2006 this will be Saturday, 22nd April. Again, a date for your diary.

RD Results

I have not yet received a copy of the full results from the 2005 Remembrance Day Contest from the Contest Manager. The results will be published as soon as they become available.

Good contesting and 73

Australian Contest Dates 2006

March	18/19	John Moyle Memorial Field Day	(CW/SSB/FM)
April	8	QRP Hours	(CW/PSK31/RTTY/SSB)
	22	Harry Angel Memorial Contest	(CW/SSB)
May	20	VK/trans-Tasman 80 metres Phone Contest	
	27	VK/trans-Tasman 80 metres CW Contest	
	28		
June	4	VK/trans-Tasman 80 metres CW Contest	
	10/11	ANARTS RTTY Contest	
July	8	VK/trans-Tasman 160 metres Phone Contest	
	22	VK/trans-Tasman 160 metres CW Contest	
August	5	QRP Day Contest	(CW/SSB/FM/PSK31)
	12/13	Remembrance Day Contest	(CW/SSB/FM)
	26	ALARA Contest	(CW/SSB)
October	7/8	Oceania DX Contest	(SSB)
	14/15	Oceania DX Contest	(CW)
November	18	VHF Spring Field Day	(CW/SSB/FM)
December	26	Ross Hull Memorial VHF Contest	

"Hey, Old Timer..."

If you have been licensed for more than 25 years you are invited to join the

Radio Amateurs Old Timers Club Australia

or if you have been licensed for **less than 25 but more than ten years**, you are invited to become an **Associate Member** of the RAOTC.

In either case a **$5.00** joining fee plus **$8.00** for one year or **$15.00** for two years gets you two interesting OTN Journals a year plus good fellowship.

Write to
RAOTC,
PO Box 107
Mentone VIC 3194
or call Arthur VK3VQ on **03 9598 4262** or Bill VK3BR on **03 9584 9512**,
or email to raotc@raotc.org.au
for an application form.

QRP Hours Contest

Saturday, 8th April, 2006

0930 – 1030 UTC CW/RTTY/PSK31

1030 - 1130 UTC SSB

Sponsored by the CW Operators' QRP Club, the aim of this contest is to make as many contacts as possible within a one-hour period using your choice of mode. Whilst it is hoped that the event will be strongly supported by QRP Club Members, it is open to all licensed amateurs.

Output Power:

Preferably 5 watts, but not more than 10 watts of carrier power. This is to stress the QRP nature of the event.

Modes:

First Hour - CW (including RTTY and PSK31) 0930 UTC (1930 Eastern Standard Time)

Second Hour - SSB 1030 UTC (2030 Eastern Standard Time)

Frequencies:

CW/PSK31/RTTY 3.500-3.540 MHz
SSB 3.550-3.630 MHz

Exchange a three-digit serial number starting at 001 and incrementing by one for each new contact.

Score one point per contact.

Logs must show the name, address and callsign of the operator and the number of points claimed.

Send Logs by mail to:
Ian Godsil VK3JS,
363 Nepean Highway,
Chelsea, 3196;
or by email to:
vk3js@bigpond.com

Please consider using email and sending the log immediately after the event. Otherwise logs should be received by last mail on
Friday, 21st April, 2006.

Certificates will be awarded to the highest scorers in each Mode in each State.

Ross Hull Memorial VHF-UHF Contest 2005 – 2006: Results

Contest manager: John Martin VK3KWA

This is the second year of the new rules. The main developments this year have been a resurgence in VK4, less than usual activity in VK3, and a mixture of old and new callsigns.

The upsurge of VK4 was led by Glenn VK4TZL, who now chalks up a third contest win. Other top scorers were Colin VK5DK, Roy VK4ZQ, and Rod VK2TWR. In Section B, Glenn scoops the pool again, followed by Peter VK3KAI and Colin VK5DK. And in Section C, Rex VK7MO seems to be quite unassailable. Congratulations to these and to all entrants.

I'm still thinking about the rules and trying to work out how to boost the activity back to the level of the "good old days" in the eighties and early nineties. The three new contest sections don't seem to be achieving that. I have received several suggestions that it would be better to go back to the original seven-day and two-day sections – and maybe the distance-based scoring system needs to be reviewed. But the only practical alternative would be a grid square system, as used in the VHF-UHF Field Days. Worth a try perhaps? There is definitely a need to find a way of getting more stations on the air and attracting newcomers to the fascinating world of VHF DX.

Any comments or suggestions would be gratefully received – VK3KWA (QTHR) or

vhf-contests@wia.org.au.

Ross Hull Contest 2005 - 2006

Call	Name	50	144	432	1296	2.4G	3.4G	5.7G	10G	24G	TOTAL
Section A: VHF-UHF (6m – 23cm)											
VK4TZL	G. McNeil	85	2028	755	872	-	-	-	-	-	3740
VK5DK	C. Hutchesson	16	1623	765	480	-	-	-	-	-	2884
VK4ZQ	R. O'Malley	375	1368	755	312	-	-	-	-	-	2820
VK2TWR	R. Collman	18	714	785	336	-	-	-	-	-	1853
VK3UH	L. Mostert	138	450	545	496	-	-	-	-	-	1629
VK7MO	R. Moncur	22	135	650	-	-	-	-	-	-	807
VK3HV	G. Francis	132	162	220	272	-	-	-	-	-	786
VK2TG	R. Demkiw	19	468	255	-	-	-	-	-	-	742
VK4KZR	R. Preston	-	204	110	264	-	-	-	-	-	578
VK3KAI	P. Freeman	1	150	125	280	-	-	-	-	-	556
VK2ZRE	R. Gilbert	-	450	95	-	-	-	-	-	-	545
VK4CDI	P. Moat	1	264	150	-	-	-	-	-	-	415
VK6DXI	M. Rozbicki	9	159	105	32	-	-	-	-	-	305
VK1WJ	W. Jirgens	35	27	20	-	-	-	-	-	-	82
Section B: Microwaves (23cm and above)											
VK4TZL	G. McNeil	-	-	-	952	-	-	-	-	-	952
VK3KAI	P. Freeman	-	-	-	280	110	100	90	130	-	710
VK5DK	C. Hutchesson	-	-	-	488	40	40	40	70	20	698
VK3HV	G. Francis	-	-	-	272	-	-	-	30	-	302
VK4KZR	R. Preston	-	-	-	264	-	-	-	-	-	264
Section C: Digital modes, All Bands											
VK7MO	R. Moncur	-	1011	1090	-	-	-	-	-	-	2101
VK1WJ	W. Jirgens	-	165	-	-	-	-	-	-	-	165

Ross Hull Contest: List of Winners, 1950 - 2006

1950 - 1951	VK5QR	R. Galle
1951 - 1952	VK5BC	H. Lloyd
1952 - 1953	VK4KK	A. K. Bradford
1953 - 1954	VK6BO	R. J. Everingham
1954 - 1955	VK4NG	R. Greenwood
1955 - 1956	VK3GM	G. McCullough
1956 - 1957	VK3ALZ	I. F. Berwick
1957 - 1958	VK3ALZ	I. F. Berwick
1958 - 1959	VK3ALZ	I. F. Berwick
1959 - 1960	VK4ZAX	D. R. Horgan
1960 - 1961	VK3ARZ	W. Roper
1961 - 1962	VK5ZDR	M. J. McMahon
1962 - 1963	VK4ZAX	D. R. Horgan
1963 - 1964	VK5ZDR	M. J. McMahon
1964 - 1965	VK3ZER	R. W. Wilkinson
1965 - 1966	VK3ZDM	J. R. Beames
1966 - 1967	VK5HP	J. H. Lehmann
1967 - 1968	VK3ZER	R. W. Wilkinson
1968 - 1969	VK5ZKR	C. M. Hutchesson
1969 - 1970	VK3ZER	R. W. Wilkinson
1970 - 1971	VK4ZFB	E. F. Blanch
1971 - 1972	VK5SU	J. W. K. Adams
1972 - 1973	VK5SU	J. W. K. Adams
1973 - 1974	VK5SU	J. W. K. Adams
1974 - 1975	VK5SU	J. W. K. Adams
1975 - 1976	VK5SU	J. W. K. Adams
1976 - 1977	VK4DO	H. L. Hobler
1977 - 1978	VK3OT	S. R. Gregory
1978 - 1979	VK4DO	H. L. Hobler
1979 - 1980	VK3ATN	T. R. Naughton
1980 - 1981	VK6KZ	W. J. Howse
1981 - 1982	VK6KZ	W. J. Howse
1982 - 1983	VK6KZ	W. J. Howse
1983 - 1984	VK6KZ	W. J. Howse
1984 - 1985	VK3ZBJ	G. L. C. Jenkins
1985 - 1986	VK3ZBJ	G. L. C. Jenkins
1986 - 1987	VK3ZBJ	G. L. C. Jenkins
1987 - 1988	VK5NC	T. D. Niven
1988 - 1989	VK5NC	T. D. Niven
1989 - 1990	VK3XRS	R. K. W. Steedman
1990 - 1991	VK3XRS	R. K. W. Steedman
1991 - 1992	VK3XRS	R. K. W. Steedman
1992 - 1993	VK3XRS	R. K. W. Steedman
1993 - 1994	VK3XRS	R. K. W. Steedman
1994 - 1995	VK3XRS	R. K. W. Steedman
1995 - 1996	VK2FZ/4	A. Pollock
1996 - 1997	VK2FZ/4	A. Pollock
1997 - 1998	VK2FZ/4	A. Pollock
1998 - 1999	VK3XPD	A. P. Devlin
1999 - 2000	VK3EK	R. G. Ashlin
2000 - 2001	VK4TZL	G. R. McNeil
2001 - 2002	VK4TZL	G. R. McNeil
2002 - 2003	VK3EK	R. G. Ashlin
2003 - 2004	VK3EK	R. G. Ashlin
2004 - 2005	VK3UH	L. Mostert
2005 - 2006	VK4TZL	G. R. McNeil

Summer VHF-UHF Field Day 2006: Results

Contest manager: John Martin VK3KWA

The last Field Day was well supported. For reasons yet to be understood, the weather was good and so was the propagation! Some quite noteworthy contacts were made, including a new VK3 record for the 2.4 GHz band. Congratulations to the winners of each section – VK3KAI, VK3WRE, VK3UHF, VK5SR and VK2KRR. To those who participated for the first time this year, congratulations also on excellent results, and we hope to see you again next time round.

Call	Name	Location	50	144	432	1296	2.4 GHz	3.4 GHz	5.7 GHz	10 GHz	24 GHz	TOTAL
Section A: Single Operator, 24 Hours												
VK3KAI	P. Freeman	QF21,22,31,32	21	429	455	960	790	780	780	940	-	5155
VK2TWR	R. Collman	QF44	77	756	1125	608	-	-	-	-	-	2566
VK3HY	G. Brain	QF32	158	774	1000	480	-	-	-	-	-	2412
VK4OE	D. Friend	QG61	-	444	455	328	450	-	-	-	-	1677
VK5OM	J. Bywaters	QF02	71	441	505	456	-	-	-	-	-	1473
VK6DXI	M. Rozbicki	OF88	46	207	250	208	-	-	-	-	-	711
Section B: Single Operator, 6 Hours												
VK3WRE	R. Edgar	QF31	-	279	465	624	790	760	770	890	-	4578
VK3KAI	P. Freeman	QF21,22,31,32	21	399	430	658	670	660	560	820	-	4248
VK3HGY	D. Wright	QF31	-	261	655	256	210	-	430	-	-	1812
VK3UH	L. Mostert	QF21	57	249	355	504	-	-	-	210	-	1375
VK3HV	G. Francis	QF21	56	246	350	504	-	-	-	210	-	1366
VK3YFL	B. Dunkley-Smith	QF12,22	65	444	625	-	-	-	-	-	-	1134
VK5OM	J. Bywaters	QF02	57	297	355	396	-	-	-	-	-	1105
VK2TPK	P. Kohlmayer	QF56	33	114	165	-	-	-	-	-	-	312
VK5DC	D. Cavies	PF94	58	74	-	-	-	-	-	-	-	132
Section C: Multi Operator, 24 Hours												
VK3UHF	GUMEG (1)	QF21	124	681	975	1152	600	460	450	750	210	5402
VK3EG	EGRG (2)	QF42	116	570	340	432	230	230	250	240	-	2408
VK3ATL	GARC (3)	QF11	50	456	655	448	350	-	-	250	-	2209
VK3III	Horsham ARC (4)	QF12	144	768	720	576	-	-	-	-	-	2208
VK2AES	(5)	QF45	48	444	345	312	-	-	-	-	-	1149
VK5AR	(6)	PF94	158	486	465	-	-	-	-	-	-	1080
Section D: Multi Operator, 6 Hours												
VK5SR	SERG (7)	QF02	96	615	630	608	160	140	120	160	-	2529
VK3WWW	(8)	QF22	122	384	445	-	-	-	-	-	-	951
Section E: Home Station, 24 Hours												
VK2KRR	L. Rainbird	QF34	24	507	625	376	-	-	-	-	-	1532
VK3UDX	G. Beadle	QF22	80	378	495	424	-	-	-	-	-	1377
VK3UH	L. Mostert	QF21	78	303	445	456	-	-	-	-	-	1282
VK3BG	E. Roache	QF24	32	174	235	176	-	-	-	-	-	617
VK3DMW	K. Brown	QF31	34	384	175	-	-	-	-	-	-	593
VK1WJ	W. Jirgens	QF44	77	177	170	-	-	-	-	-	-	424
VK2CZ	D. Burger	QF56	-	228	-	-	-	-	-	-	-	228

(1) Geelong UHF/Microwave Experimenters' Group: C. Gnaccarini VK3PY, D. Learmonth VK3QM, C. Kahwagi VK3NX.

(2) East Gippsland Radio Group: R. Ashlin VK3EK, R. Donnan VK3VHF.

(3) Geelong Amateur Radio Club: L. De Vries VK3PK, K. Jewell VK3NW, I. Westerland VK3VIN.

(4) Horsham ARC: T. Morgan VK3JTM, D. Timms VK3YLV, G. Richards VK3FIQ, A. Clark VK3SSB, C. McGrath VK3HSV.

(5) A. Sayers VK2AES, D. Hughes VK1DSH, R. Manning VK1JRM.

(6) A. Raftery VK5AR, A. Russell VK5ZUC.

(7) South East Radio Group: C. Hutchesson VK5DK, D. Walshaw VK5HDW, T. Aubrey VK5EE, J. Drew VK5DJ, M. Williamson VK5HMW.

(8) J. Bramham VK3WWW, M. Chadwick VK3WT.

ar

Are you managing the estate of a 'Silent key'?

Please save any QSLs for the National QSL collection, but first contact:

The Hon. Curator,
Ken Matchett VK3TL
on (03) 9728 5350
or email: jeandawson@iinet.net.au

Rare DX, special call-signs prefixes and suffixes, pictorials and pre-war QSLs are needed.

Let us save something for the history of amateur radio.

Keep it up, VK7HAY!

I had intended to write after reading the article by VK7HAY in October AR; alas, I let the moment pass. After reading the editorial in November AR, I will say what I intended to say.

What struck me forcibly on reading VK7HAY's article was the sheer enthusiasm of this young bloke. I have seen mention of him in AR previously in connection with the activities of his club; he seems to be most passionate about his radio activities.

People like VK7HAY are our future, whether in radio or in the myriad activities of life. Nothing gives me greater pleasure than seeing young people bursting with energy and full of enthusiasm for life and what they are doing in it.

Conversely, nothing saddens me more than the contrary view that is sometimes expressed by so many of my fellow senior-cits: "Flamin' noisy kids, why don't they grow up?".

Keep it up, Hayden; may your passion never diminish.

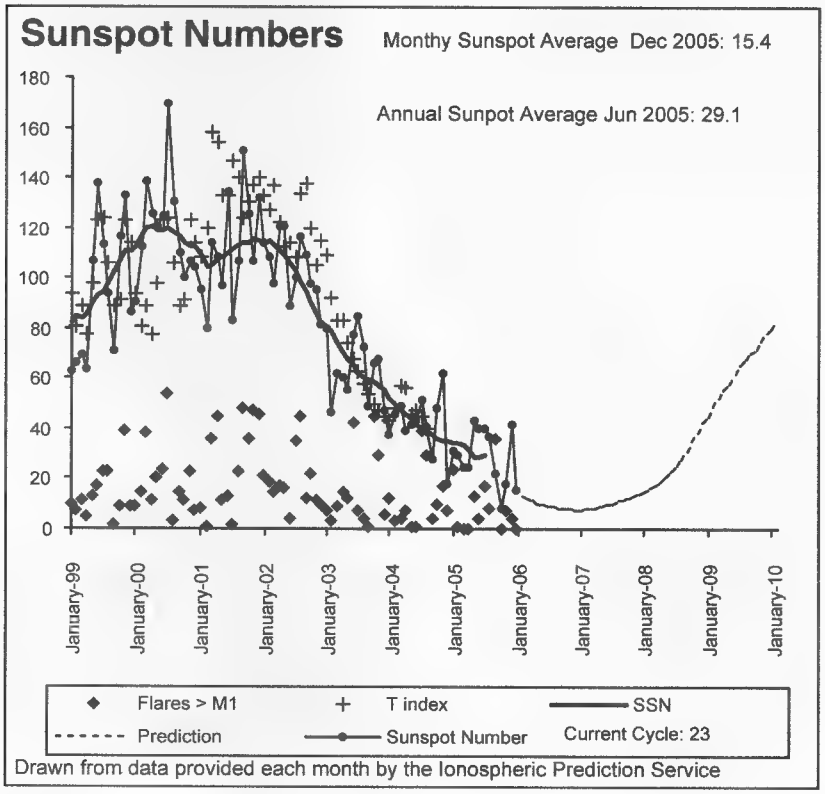
That was what I thought (and still think) after reading the article; now I gather from the November editorial that there has been criticism of the technical content.

Yes, the article was basic: there is nothing wrong with that. Hayden described an antenna which is simple to construct and will get an eager beginner on-air very quickly. This antenna will work in all but the most extraordinary circumstances. It is unlikely to be perfect; it may be unbalanced by nearby objects, it may have some current on the outside of the feedline sheath, it may not be a perfect match to 50-ohm feedline and its radiation pattern may differ from that of a dipole in free space.

But it will work!!

Once it is working the builder may well find that it has an SWR of 2:1, that it doesn't work well in certain directions or, in extremis, that it causes some odd effects from RF in the operating room. The builder, in the amateur tradition of enquiry and experiment, will ask "Why is it so?".

This will lead to further research and experimentation, along the lines of "Hey, there was an article by VK4TWI in November AR, wonder what that says?".



VK4TWI's article is a rather deeper exploration of the subject; that does not make it a better article than VK7HAY's. VK4TWI's article is an excellent one but it could be criticised as, apparently, VK7HAY's has been; it could go further.

For instance, there is a great deal more to be said about feedpoint impedance vis-à-vis height (in wavelengths) above ground than is contained in the article.

This is not a criticism of VK4TWI's article; I am just making a point.

The difficulty is that whole books have been written about the deceptively-simple dipole; the subject is considerably more-complex than might at first appear.

That is the nature of radio; despite our advances in technical knowledge there is still much art in the amateur's activities.

I think that the reader, not the editor, must be the filter. If the editor is to act in this capacity, almost every technical article would require a "consumer warning" to the effect that there is more to the relevant subject than is covered in the article.

An intelligent reader should understand the level at which an article is written. The "nanny society" has invaded amateur radio (and our lives) to a considerable extent already and we must stop somewhere.

This is not to say that articles which propound serious technical errors should be published; that is a horse of an entirely different hue. All technical articles should be scrutinised for accuracy.

VK7HAY's article is not inaccurate; it simply treats its subject at a basic level. That is part of the learning process. The outcome for the reader who decides to follow the article will be a device that is not perfect; further study (including, perhaps, reference to VK4TWI's article) and experimentation will improve that device to better suit the builder's requirements but it will never be "perfect" (whatever that means).

The amateur who starts with VK7HAY's design and develops it into something better is just acting in the true spirit of amateur radio.

Kerry Power VK2TIL.

VHF/UHF – an expanding world

David Smith VK3HZ – vk3hz@wia.org.au
Leigh Rainbird VK2KRR – vk2krr@wia.org.au

Weak Signal

David Smith - VK3HZ

The Summer VHF/UHF Field Day over the weekend of January 14/15 was blessed, in this southeast corner of the country anyway, with good conditions – both weather and propagation. Many stations – club and individual - were out on the mountaintops for the duration. On Saturday night and Sunday morning, good tropo conditions occurred across the south of VK3 into VK5. Ralph VK3WRE set up his portable microwave station on Mt Tassie in central Gippsland and worked Colin VK5DK near Mt Gambier on all bands to 10 GHz over a distance of 531.1 km. In the process, they set new VK3 records for the 2.4 GHz and 3.4 GHz bands.

On the Sunday evening, the Mt Gambier beacons were the loudest I've ever heard them in Melbourne. The 23 cm beacon was well over S9. The 70 cm beacon was S7 when it WASN'T keyed, rising to S9+40 when keyed.

Paul VK7BBW reports that there have been several good openings from northern Tasmania up to VK3/VK5. On January 13, he worked Chas VK3PY on 70 cm at S3-4. The following day, he worked John VK5NJ on 2 m FM at S5. On January 20, he did the "traps" with John working him on 2 m SSB (S1) and 70 cm (S1). The opening also included contacts with various VK3's including VK3HZ and VK3XL. Finally he reports the somewhat old, but nevertheless very interesting, news that he worked VK4CV on 2 m SSB around Christmas 2004.

On the evening of January 24, an opening from VK3/5 to VK6 produced a number of good contacts. At 0830Z, Phil VK5AKK reports working Wally VK6WG on 2 m (S7) and 70 cm (S6). They attempted a contact on 23 cm, but nothing was heard. At 1050Z, VK6WG worked VK3II, VK3UH and VK5UBC. VK5ZBK then worked Wally on 70 cm. VK5RU had success on 2 m, 70 cm and 23 cm.

On Friday evening January 27, the bands opened from the east coast across to ZL. Bob ZL3TY seemed to be holding up the eastern end of the opening and had a bumper time working many stations in VK2 and VK4.

By the Saturday evening (January 28), the opening had extended southwards to southeast Victoria, and several interesting contacts were had. See the following Digital DX Modes section for more details. Southern stations worked by ZL3TY include VK7MO, VK3HZ, VK3VHF and VK3EK. The opening continued into Sunday with contacts to VK1WJ (FSK441), VK3BDL, VK3AMK, VK3DUT, VK3KAQ, VK3BBB, VK3ZYC, VK3KAI, VK3II and VK3ALA. Conditions finally faded out at about lunchtime on the Sunday. Unfortunately, Bob's 70 cm antenna was down, so all contacts were on 2 m. He reports that it was a great weekend for him, working 20 x VK2, 12 x VK3, 3 x VK4, VK7MO and VK1WJ and a near miss with 2 x VK5.

At the same time, conditions were excellent along the east coast between VK2 and VK4. Chris VK2DO near Canberra worked Trevor VK4AFL in Brisbane and Kev VK4KKD on 2 m. Chris then worked Trevor on 70 cm at S3. Rod VK2TWR worked Glen VK4TZL on 2 m.

Finally, it's good to hear of a station in a rare area becoming active on the low end of the band. Doug VK9ZLH is on Lord Howe Island for the next 3 years. Kerry VK2BXT to the south of Sydney reports that on Friday January 27, he worked Doug on 2 m with signals peaking to S9+40. Kerry was Doug's first 2 m contact, as he had only put up his 10-element beam the day before. Doug runs 80 watts. Many Sydney stations subsequently worked him during the opening that extended to ZL.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

Digital DX Modes

Rex Moncur – VK7MO

From 25 to 29 January 2006, Peter VK5ZPG undertook a DXpedition to the northern Flinders Ranges to activate the rare grid square PF99 on 2 m using FSK441. Peter had some equipment problems, which reduced his power output to around 50 watts, and advises that this was a learning experience. However, he did copy 11 stations and completed contacts with VK2KRR, VK3HZ, VK3ZYC, VK3KAI and VK3II.

On 27 January 2006, Bob ZL3TY worked Dave VK2AWD, Dave VK3HZ, Rhett, VK3VHF and Rex VK7MO on JT65 on 2 m. There were two interesting things:

Firstly, there was a strong tropo-duct opening to VK2 that was allowing Bob to work the VK2s on SSB but the Hepburn chart showed this did not extend to VK3 and VK7 and no SSB contacts were made South of Wollongong. The extra sensitivity of JT65 allowed an extension well beyond that indicated by Hepburn but still took advantage of the tropo-duct at ZL3TY's end. From the Hepburn chart it would appear that the first 500 km or so from VK3/7 would have been achieved by tropo-scatter and the last 1500 km by tropo-duct. From this one can conclude that it is worth attempting JT65 contacts when ducts do not extend over the full path – up to a further 500 km or so to take advantage of possible multi-mode propagation.

Secondly, the JT65 contacts were affected by meteors and both Bob ZL3TY and Dave VK3HZ noted many meteor pings on a path of 2287 km. In the past, attempts at meteor scatter over this path have not shown any pings at all. The fact that meteors were being received suggested that tropo-ducting might be extending the range of meteor scatter. A little later Garry VK5ZK (at Goolwa, 2892 km from ZL3TY) reported he could see some pings from Bob's JT65

transmission and a sked was set up using FSK441. Bob decoded a number of pings from Garry. Peter, VK5ZLX at Angaston (2919 km) then reported pings from Bob and started transmitting. Bob also saw pings from Peter. The best was a short burn of 1.1 seconds reported by Peter. However, no contacts were completed.

The following day, ZL3TY made numerous SSB and JT65 contacts into VK3/7, as far as Melbourne, indicating that the duct had extended further South and further towards VK. A further attempt was made between ZL3TY and VK5ZK/VK5ZLX but only one decodable ping was received by ZL3TY. A few hours later, when the duct was no longer reaching Melbourne, a second attempt was made and VK5ZK received 5 decodable pings but nothing was received by ZL3TY or VK5ZLX. During the same day Ian, VK3AXH, near Ballarat, reported pings when listening to ZL3TY's JT65 signal over a path of 2387 km at the time when Bob was working JT65 into Melbourne – but JT65 was not detectable on tropo at Ian's QTH.

While a VK5 contact was not completed, this exercise was sufficient to show that the normal limit of around 2300 km for meteor scatter can be extended if there is a good tropo-duct at one end.

It is worth some conjecture about what conditions allow a tropo-duct extension of meteor scatter. It would be expected that for efficient entry to a duct the signal would need to arrive at a very low angle and thus the meteor scatter component of the path would need to be reasonably long - say 1500 km or more. Inspection of the Hepburn chart indicates this was the case between ZL3TY and the VK5s. However, the pings received by VK3AXH and VK3HZ are unlikely to have entered at the start of the duct, which was within a few hundred km, as the entry angle would be several degrees. Also, meteor scatter is unlikely over such a short path. This in turn suggests that some of the meteor extensions were entering the duct somewhere in the middle of a region which is shown on the Hepburn chart to suggest a duct. There is some evidence on the Hepburn chart of variability in the strength of the duct nearer to ZL. Thus while the best situation might be a strong duct at one end combined with a non-ducted region of around 1500 to 1800 km it seems one should not overlook the possibility of entry somewhere in the middle of a duct.

000830	21.4	160	2 26	22	3TY VK5ZK3 L3TY K ZHZQF3
004130	4.6	100	5 16	109	ZL3TY VK5ZK ZN3DY
004130	4.8	140	2 26	109	3TY VK5ZK ZL3PY VK5ZK
004130	4.6	160	1 26	109	I3TY FK7YK ZL3TY VK5ZK ZN
004130	4.6	120	4 26	109	K ZL3TY VK5ZK ZN3DZ
004130	4.8	140	2 26	152	Y VK5ZK ZL3PY VK5ZK /
004130	4.6	120	4 26	109	K ZL3TY VK5ZK ZN3DY
004730	11.4	360	3 26	109	9 VK5UK ZL3TY VK5ZK ZL3TY VK5ZO ZL3TY3RK
004730	12.0	240	2 26	152	ZL3TY VK5ZK ZL3TY VK5ZK ZL3TY VK5ZK E
004830	10.1	100	4 16	-21	L3TY 26 VK5ZLX 6Y
005830	19.3	280	4 26	109	I#K TQ R25 LY6A F 26 D 5ZLX F3 G5YLK
005830	19.3	280	3 26	109	E1TY BT 8?G6 TI UK X8KZH3F P,/K MHFQ
005930	7.7	220	3 26	65	LX 2626WZL3VY 26 VK5ZLX 2226 ZO1EQ
005930	8.0	200	5 26	65	ZLX 2626 ZL3TY 26 VK5ZLX 2626 Z
005930	8.2	440	4 26	65	VK5ZLX 2626 ZL3TY 26 VK5ZLX 2626 ZL3TY

Table 1. Decodes received by VK5ZK on the second day of testing.

The results achieved into VK5 suggest that it is well worth looking for tropo extensions of meteor scatter to the west of the Great Dividing Range whenever Hepburn indicates enhanced tropo conditions at the ZL side of the Tasman. Contacts of 2900 km and more seem to be possible (see Table 1).

While Garry heard around 15 pings on the first day of testing, these did not decode due to a set-up problem with clip set to full at 99, thus eliminating meteors (Murphy's Law). Note that while hard clipping can be useful for eliminating meteors from tropo signals on JT65, clip should not be used on FSK441. Later versions of WSJT avoid this problem by automatically changing to the default values on change of mode.

Hepburn chart for 1800 UTC on 27 January 2006

1. Tropo-ducting to Sydney area
2. Tropo-scatter extending duct to Melbourne and Hobart
3. Meteor-scatter extending duct to VK5ZK and VK5ZLX

Please send any Digital DX Modes reports to Rex VK7MO at rmoncur@bigpond.net.au.

continued next page

CASTLEMAINE RADIO TRADE DAY & SWAP MEET

Sunday April 23, 2006 10 am

Corner Hargreaves and Lyttleton St

Tables available, Door Prizes, many opportunities all in one of Victoria,s beautiful old gold mining towns

Bruce Lees 0427 271 071 for details

The Magic Band – 6 m DX

Brian Cleland – VK5UBC

Sporadic E openings continued to occur during January and early February without any highlights although some good openings occurred from VK6. Odd openings occurred on many days in January with good openings down the eastern seaboard and to VK5 on the 12th, 14th, 15th and 16th January with the band being open several hours on these days. Norm VK3DUT made a good contact with VK6KDD in Port Hedland on the 16th January.

Bumper openings occurred from VK6 to VK5, 3 and 2 on the afternoons of the 4th and 6th February. Many VK6s including VK6HK, ZAK (Kalgoorlie), JJ, JR, AB, IP, RZ, RO, KDX, ZWZ, CO were worked in VK5 and on 4th February the opening extended to northern NSW where Leigh VK2KRR worked 8 VK6s on his dipole. Also during this opening Noel VK6ZAK in Kalgoorlie was able to work stations in the Perth area on backscatter. On the 6th February the opening extended to northern VK3 where Norm VK3DUT worked several of the VK6s. It was great to hear so many VK6s on the band.

A good opening from John VK4FNQ in Charters Towers to VK6 on the 9th January when John worked VK6RO, IQ, ZKO, JJ and RZ. John also had an opening to ZL on the 7th January where he worked ZL2TPY and ZL2BPL.

On the 7th January ZL'S were also worked by Brian VK5UBC from his portable QTH at Corny Point (PF85mc).

It is also worth looking out for the odd tropospheric contact. Recently I have worked Leigh VK2KRR (The Rock 760km) and Terry VK3ATS (Mildura 300km) early in the morning. These contacts are normally possible when good tropospheric conditions are being experienced on 2 m.

Received a note from Jack VK2XQ in Sydney summarising December/early January activities as follows:-

Only two openings to Japan noted in December, nothing in January so far. The two JA openings have been quite short, only 10 to 20 minutes or so and on 4th December I worked JA2DDN. Nothing from South Korea, Hong Kong or China heard.

The path to ZL is the only regular event, sometimes open as early as 2000UTC and closing as late at 1300UTC. All of ZL call areas (ZL1, ZL2, ZL3 and ZL4) have been heard/worked in Sydney.

New Caledonia is also fairly regular from mid to late morning onwards, from 2230UTC right through to 1000UTC on some occasions. FK8SIX beacon often 20dB over, but only operator heard this season was FK1TK working VK4s.

Interstate DX has been good with all of VK4 noted. Although VK4ABP beacon has been heard many times, as yet no one has been worked in Longreach, there have been odd paths to VK3, mostly on scatter and the VK7 path has been irregular, but when open the regulars from Hobart and Launceston have been worked or heard. VK6 path in the afternoon to late evening has produced some lengthy openings with good signals, not regular though, just have to be on at the right time to get this path.

VK5 and VK8 Alice Springs also about, VK8 beacon comes in when the VK5s are strong indicating the path has extended.

Jim VK9NS has not been heard on six this season. Usually when the FK8 beacon is strong, Norfolk Island can be worked.

Not many new ops on six this season, same old voices, same old grid squares means I have lost a little interest. The radio often runs for hours but I have not worked anyone but have heard the same old calls etc. Many of the regular six ops in Sydney are absent this season too, some days I am the only Sydney station on air.

Despite being reported as back on air in "test" mode, I have yet to log the Launceston beacon, the VK5RBV beacon beats the VK5VF beacon hands down. The ZL1VHF beacon in Auckland is off air until further notice. Only VK4 beacons on air are RTL, ABP and RGG, rest are off air and have been for some time.

Thanks Jack, my observations in VK5 are fairly similar, my log indicates that the number of contacts and different stations worked this season to be about 30% down on the previous season. Generally there appear to have been fewer regular openings with activity down. One very disappointing aspect is there is very little activity from the NT with Jeff VK8GF in Alice Springs being the only active station with no reported contacts into the Darwin area. Also I do not know of any beacons or activity from Papua New Guinea.

Please remember to send any 6 m information to Brian VK5UBC at bcleland@picknowl.com.au.

2 m & 70 cm FM DX

Leigh Rainbird - VK2KRR

FM DX during January was quite eventful with some good openings, mainly in the south of the country.

A pretty big duct opening occurred on the public holiday Monday 02/01/06. This opening spanned the legendary Great Australian Bight Path. During this opening, conditions noted from my QTH were reasonable to the Adelaide area repeaters. However, better signals were noted from the repeaters at Mt Gambier and Naracoorte. Of more significance, I was also able to access the VK6RMS Boddington, Mt Saddleback repeater on 147.250 MHz, approximately 120 km SE of Perth and 2817 km from my QTH. Did not hear any response to my CQ calls and the repeater signal was only as good as an S2 here.

Things were very quiet in VK4 during January. But one quick report from Mike VK4MIK near Cairns showed a long path on 04/01/06, where Mike was able to get into the VK4RGA Monto repeater over a big 951 km distance down the coast. Sadly no reports of Papua New Guinea 2 m signals heard in VK4 again this summer.

Noted on the 09/01/06, a rare contact from Grant VK2AXB in Orange way down to Mt Macedon VK3RMM. Here Grant worked John VK3HJW mobile and some other VK3s.

More big tropo openings in the south on 13th and 14th January and a Bight Path opening on the 25th January made

Can you help?

Australian QSL card request for a book on our Ham Radio Stations

Many of us have seen the plethora of books on the subject of Crystal Radio sets as well as Valve Broadcast sets from the 1920s to 1960s. But how many books have you seen on the subject of Amateur Radio Equipment and more important, the Stations of the Hams of the early days up to the beginning of commercial equipment in the shack in the 1960's.

Well in an attempt to address this void in our history and to give something back to this great hobby of ours, I am undertaking to write a book on exactly that. My book will be based on the information provided by the Stations history itself in the form of QSL Cards. I plan to look at the stations of the day and seek out information of the equipment that was used, the valves, the aerials, and forms of modulation. A general census you might say of how we as amateur radio operators in Australia went about the hobby of ham radio.

This is to be a long term project, and I am hoping that you, the readers of "AR" might like to contribute with perhaps some early cards from the 1920s to say the pre World War Two, covering the introduction of TWO Letter call QSL Cards, be they scanned on a disc or simply donated, should you wish to part with them. The next bracket of cards for information would again be Two-Letter Cards covering post WW2 to the 1960s. This way I can obtain a pretty good demographic of the way things were from the 1920s to pre WW2 and beyond when stations started to become ex disposals right up to the commercial period. Best of all, it also becomes a time capsule of our past.

I look forward to hearing from you one and all with any assistance you might like to offer in the form of QSL cards or information to make this project a success. I can be contacted as below:

Michael J. Charteris VK4QS.
Email: empire1963@hotmail.com
Or ph: (07) 3282 9539

Valves in Class C

I have read Brian VK2GCE's comments that I have made errors on the efficiency of various types of valves in class C. Sorry Brian, I do not agree with your comments about the efficiency of valves in class C. The efficiency is not necessarily dictated by a particular formula, but more by the characteristics of the particular valve type and how it is used in a circuit. I did a number of tests with small battery valves of similar types and characteristics to the ones used in the early Flying Doctor Radios and built replicas of these early sets. The best efficiency I could get was around 40% in class C. I really did think that I was doing something wrong and persisted with my tests for some time.

I then happened on information in the RCA Transmitting Tube Manual on the 3A4, a small battery transmitting valve similar to the 33 used in some early FDS radios. Surprise, surprise, it has a plate circuit efficiency of around 40% in Class C. The 807 is around 62.5% with 400 volts on the plate, and the Eimac 4CV100,000E is around 85% efficient with 13 kV on the plate and drawing 9 amps plate current, with 117 kW in for 100 kW out. All three types are quoted as running in Class C.

Brian you also say that the total efficiency of the AC valves (heater/filament, screen and plate) will not be as good as the battery type valves. This also is not true. The 3A4 total power consumption to give 1.2 watts output is 4 watts, an efficiency of 30%. The 807 with 400 volts on the plate (similar to early FDS radio transceivers of the 40s and 50s) is 48.9 watts input total for 25 watts output = 51% efficiency. If you want to include the 4CV100,000E the total input, heater/filament, screen and plate equals 122 kW for 100 kW out which gives 82%.

On this last point I realise that the big valves need to be on for some time, 30 seconds or so, before they are ready for full output, but as I said in my article they are only used for short periods and the receiver is run with the transmitter heaters off most of the time to conserve electrical energy.

You will see more detail on my experiments and the types of sets used in the Flying Doctor Service in my book "Outback Radio from Flynn to Satellites".

Rodney Champness VK3UG

VHF/UHF – an expanding world *continued*

for some big signals. VK5 repeaters such as Lobethal, Crafers, Barossa Valley, Central North, Naracoorte, Bordertown, Murray Bridge, Port Lincoln, Port Augusta were all 5/9+ into my location at some stage. A call on 146.500 produced a small pile up from here with stations VK2PDW Wagga, VK2AYM Albury, VK3YLV Horsham, VK3FIQ Stawell, VK2RO/m Yarrawonga, VK3JRA/m Kyabram. VK5AEP at Port Lincoln was also worked on a separate occasion.

Please remember to send through any 2 and 70 FM DX reports to Leigh VK2KRR at vk2krr@wia.org.au

Amateur Radio
–100%
amateur radio!

Spotlight on SWLing

Robin Harwood VK7RH

Autumn has arrived and the days are rapidly drawing in. Propagation has altered due to the seasonal variations with signals coming in the late afternoon to early evening.

Traditionally the end of this month sees the major frequency alterations to coincide with the introduction of Daylight saving in the Northern Hemisphere on 26th March at 0100. This usually coincides with those Australian states reverting to Standard Time. However because the final day of the Commonwealth Games falls on that date, they have extended Daylight Saving by one week in Victoria, Tasmania and NSW. I do not know if this applies in SA.

Another international broadcaster has departed shortwave. Radio Tashkent in Uzbekistan went quietly. It may still be using shortwave for relays of its domestic service. I remember hearing them in the early 60s in English but lately they have been very hard to hear. Their targets were Afghanistan, Iran, India, Pakistan and the Islamic minority in NW China. After the breakup of the USSR, Uzbekistan developed an independent foreign policy and initially warmed to the US. After 9-11, the Americans and their coalition partners needed airbases in Uzbekistan to refuel on their way to Afghanistan. The Uzbeks supported the anti-Taliban coalition and there is a sizable Uzbek minority in Afghanistan's western provinces. After initially supporting the so-called War on Terror, Uzbekistan closed the US bases, after the Americans criticised the autocratic actions of it government.

Radio Slovakia International has obtained a reprieve and will be continuing shortwave broadcasting. A permanent funding mechanism is being worked out.

The VOA in Washington made huge cuts in its broadcasting output on February 1st. A major change has been the reduction of available channel capacity. The aim is to eliminate shortwave in 2007 but this, they concede, is impossible, particularly in Africa, where the Internet is non-existent. Surrogate broadcasters such as Radio Farda to Iran, Radio Free Asia and Radio Marti to Cuba will be unaffected. Programs of Radio Liberty to Eastern Europe have already been severely cut back with the emergence of an independent media. Programming to Zimbabwe will be significantly increased in radio and television.

In last month's column, I remarked on being able to use the dxtuners website to remotely access worldwide receivers. My favourite site is located in Johannesburg, South Africa and I find the best time is around 0300. This is when many stations in this region sign on. For example, I am hearing Zimbabwe on 6612 and it is full-scale deflection, despite it being a harmonic of 3306.

It is therefore odd that the fundamental is not heard in Johannesburg yet I am informed that both can be heard within Zimbabwe. They say the broadcaster does not have funds to repair the sender.

Many older listeners may recall the voice of Keith Glover over Radio Australia. He was the compere of their very popular Mailbag program as well as the voice of the Saturday afternoon Sports Panel on the ABC. Sadly Keith died on 3rd February. I was privileged to meet him when RA was based in Burwood VIC, as part of an ARDXC tour in the early 80s.

This month also sees the Commonwealth Games in Melbourne from the 16th to the 26th. I expect that many Commonwealth broadcasts will be live or have frequent reports on the events.

Also voting in the Israeli General Election will be on the 23rd. Kol Israel in Jerusalem has been covering it in detail and this station tenuously remains on shortwave. Because this election is so important, it has also been extensively covered by the worldwide media, each reflecting a different viewpoint.

Well that is all for this month. My email address is vk7rh@wia.org.au or 20/177 Penquite Road, Norwood TAS 7250

Silent keys

Lindsay Collins VK2YN previously VK5GZ

Lindsay passed away on 27th November 2005 in northern NSW where he lived with and is survived by his wife Beryl and daughter Judy.

He would have been well known particularly to us more mature operators and very few would have missed a CW contact with him at some time in the past.

Lindsay was a member of the Royal Australian Signal Corps during WW2 and served in the Middle East and New Guinea. Later he became an active "Ham" achieving life membership of the Royal Signals Amateur Radio Society and also became active in the Royal Australian Signals Association here in South Australia.

He is noteworthy for his dedication and in fifty years of operating his enthusiasm never wavered. In fact as his health deteriorated in the few weeks before his death he was still active on the bands.

Submitted by Godfrey Williams VK5BGW

Elwyn Harriss VK7EH

Elwyn Harriss VK7EH, of Beauty Point, passed away on 9 February 2006 after a long battle with cancer. Elwyn was a supporter of the VK7 WIA Division and the Northern Tasmania Club for many years. He was a keen and consistent supporter of the VK7 Sewing Circle 80m Net and a couple of other HF activities, and for a long time kept his condition known only to a few close friends. Pretty hardy, staying with us and active in the hobby for a couple of years after the terminal point specified by the medical men. Vale Elwyn.

Justin Giles-Clark VK7TW

Graham Pitts VK5GE/VK6GF

8 August 1915 - 12 November 2005

I first met Graham when, as a young PMG Cadet Radio Inspector, I was required to perform a typical beauracratic task, and interview this then famous Outback Communicator on the matter of his changing his Amateur Station Licence, from Alice Springs to Pt. Augusta without permission from the PMG! Such a petty task seemed trivial to me at the time and still would. We started our friendship on a very sour note.

Graham was famous in both the above cities as the local radiocommunications "guru", and listening to him in contact with outstations of the RFDS network, I learned even more about his unusual technical ability. He later came to my attention through monitoring some of his daily schedules with outstations on the Pt. Augusta network, and hearing him fault find a transceiver by 'walking' station owners through their equipment from battery supply to the tip of the antenna in their outback stations.

The logic and analysis used was extraordinary, and his help was of valuable assistance to the station owners, saving them days and sometimes weeks without communications, while the set was away undergoing repairs. There were and still are, no maintenance people roaming the outback, to call on at short notice.

My later professional contact with Graham occurred when the RFDS was being 'drummed' out of Pt. Augusta, by residents living close to the Base Station. A 1000 watt AM transmitter was causing interference to TV reception from Adelaide, some 400 km away. Graham had changed his delta fed dipoles to coaxial cable feed with baluns, with great improvement to most of the complainants, however there remained a significant number of close by persons affected. Graham and I worked together on the output stages of the transmitters, installed high Q traps in each anode lead, and adjusted them to the appropriate harmonic.

Our efforts saved RFDS the extreme expense of moving out of town at that time, however with the changeover to SSB a few years later, a move to remote operation was arranged.

In his retirement Graham set up an Amateur station at Kensington Gardens in Adelaide, and provided numerous contacts with other retired professionals from the Broadcast, Communications and related industries, on nightly schedules on 3.5 and 7.0 MHz. I visited him and his wife at that location on a number of occasions, enjoyed their hospitality, and later joined in on this interesting Net when I retired.

Graham moved to Bunbury some years ago, and I lost contact with him for a while, however in recent years, the Internet provided the opportunity for some spasmodic exchanges.

I have lost a good friend.

Rob Gurr VK5RG

I came to know Graham in 1999 when I was researching the story of the development of radio communications in the outback of Australia for a book I was writing. Without his assistance my book Outback Radio would not have been as accurate or complete as it is. We, collectively, would have lost so much of our history of communications in the outback without Graham's help. He provided me with circuits, copies of early letters, manuscripts of talks and seminars, technical manuals, etc. He provided the introduction to the book and many interesting little asides appear in it. I could run various scenarios past him and through all of these discussions, I came to know a gentleman who was passionate about the Royal Flying Doctor Service (this title was bestowed on it in 1955) and who was concerned that the history of communications in the outback be preserved. He proofed various sections of the book and he saw it in its final format and was well satisfied with the end result.

Graham obtained his First Class Commercial Certificate of Proficiency in the 1930s. At the time this was the highest qualification obtainable unless you had an engineering degree. He was a radio officer on several ships and then transferred to the Marconi School of Wireless in the early days of WWII. On marrying Evelyn in 1943 he obtained a position at a broadcast radio station in Adelaide. In 1944 he applied for a job at Alice Springs at the Flying Doctor Service base as the Base Director, which he obtained. This was the start of his association with the service that lasted officially until 1980 when he retired. However, he did not lose his interest in the service or radio communications and acted as a consultant to other communication services for a number of years.

Perhaps the pinnacle of his career was the part that he played in the establishment of the now quite famous and important School of the Air. The School of the Air was the brain child of Adelaide Meithke (OBE) a retired school Inspector. Graham was the nuts and bolts man who worked out how the equipment of the Flying Doctor Service radio network could be used to make sure that the School of the Air would be successful. When the first broadcasts took place in 1950 the radio equipment available to accomplish this task was not suitable for the task. Like any good amateur radio operator, Graham had to modify the equipment so that it would achieve the results sought after.

Graham's actions improved the quality of communications and education in the outback from which many people have benefited. Like Rob I also have lost a good friend.

Rodney Champness VK3UG

Plan ahead

Harry Angel Sprint

April 22

HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

March 2006
T index: 15

Legend

Frequency scale: UD, F-MUF, OWF, E-MUF, ALF, >10%, >50%, >90%

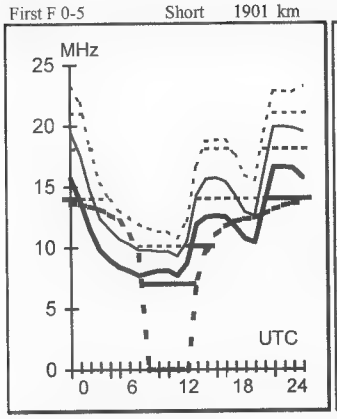
Time Scale

These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.
These frequencies as identified in the legend are:-

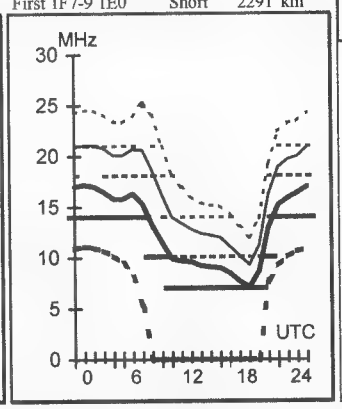
- Upper Decile (F-layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

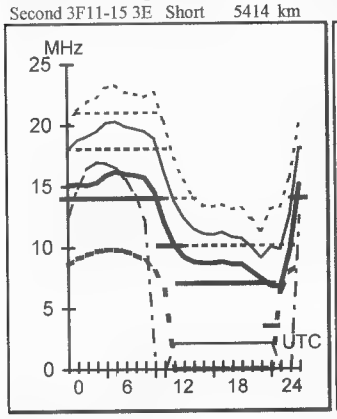
Adelaide-Ottawa 58
First F 0-5 Short 1901 km



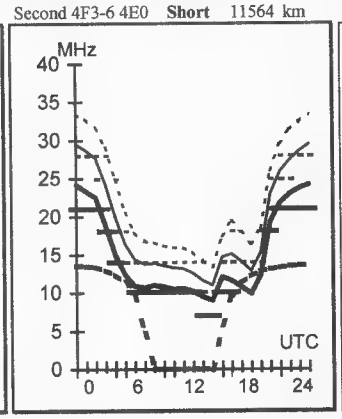
Brisbane-Auckland 128
First 1F7-9 1E0 Short 2291 km



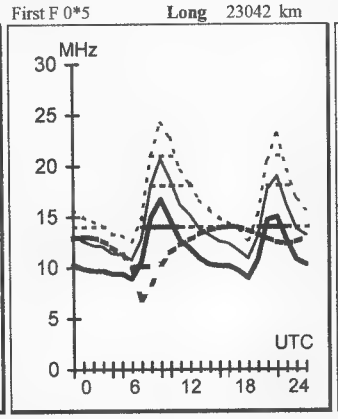
Adelaide-Singapore 311
Second 3F11-15 3E Short 5414 km



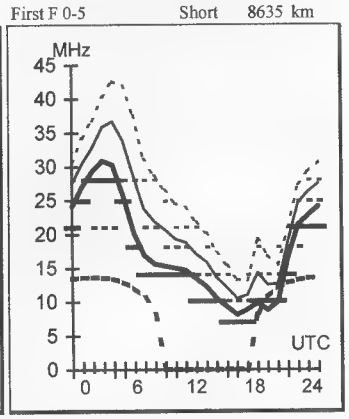
Brisbane-Las Vegas 59
Second 4F3-6 4E0 Short 11564 km



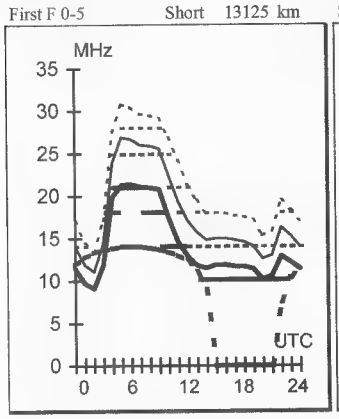
Canberra-London 136
First F 0*5 Long 23042 km



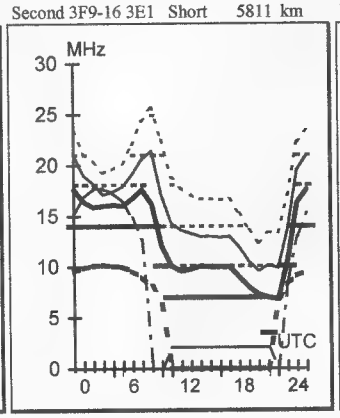
Darwin-Honolulu 65
First F 0-5 Short 8635 km



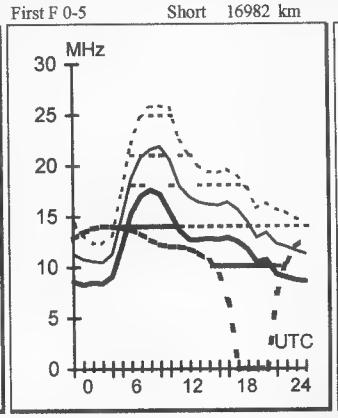
Adelaide-Tel Aviv 291
First F 0-5 Short 13125 km



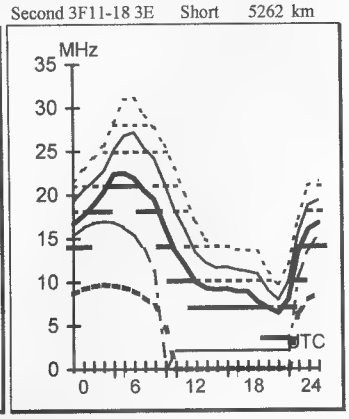
Brisbane-Manila 320
Second 3F9-16 3E1 Short 5811 km



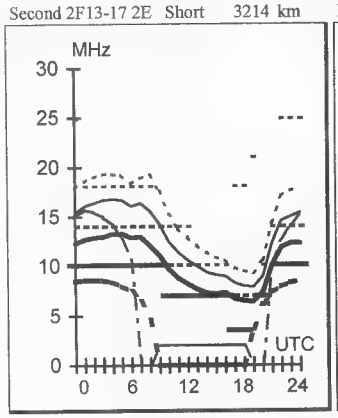
Canberra-London 316
First F 0-5 Short 16982 km



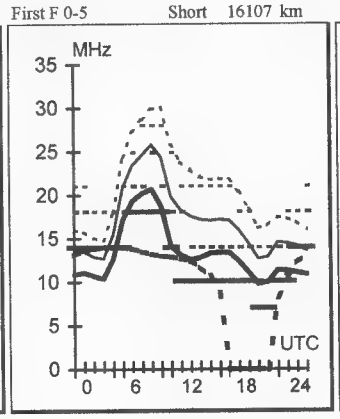
Darwin-Osaka 5
Second 3F11-18 3E Short 5262 km



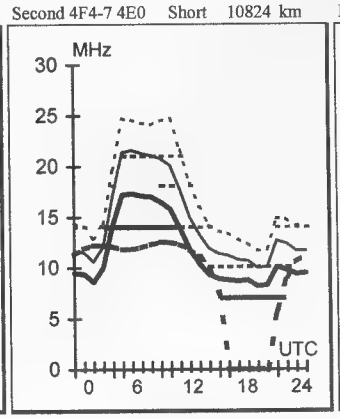
Adelaide-Wellington 114
Second 2F13-17 2E Short 3214 km



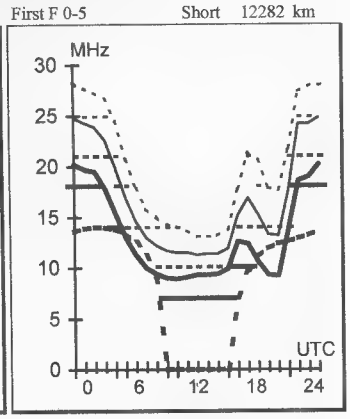
Brisbane-Rome 305
First F 0-5 Short 16107 km



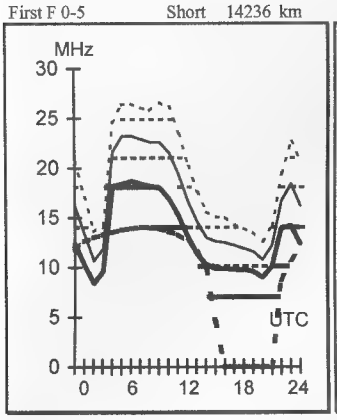
Canberra-Pretoria 231
Second 4F4-7 4E0 Short 10824 km



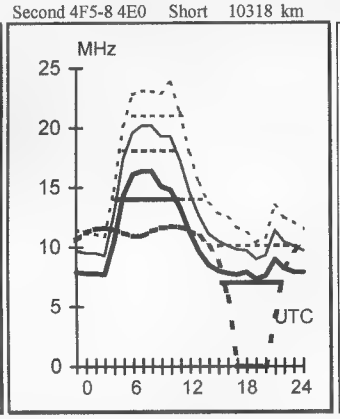
Darwin-Seattle 44
First F 0-5 Short 12282 km



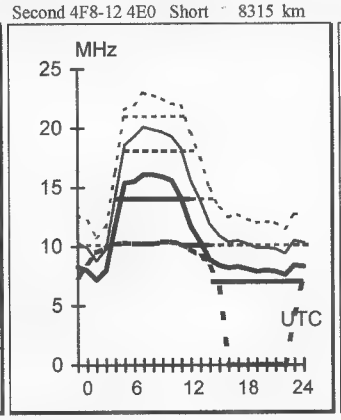
Hobart-Cairo 278
First F 0-5 Short 14236 km



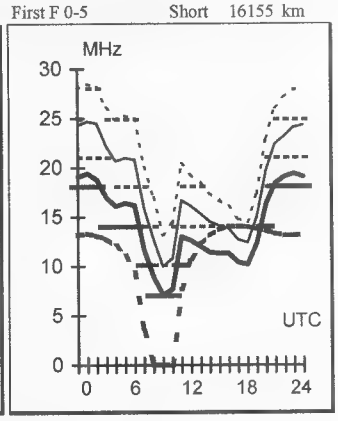
Melbourne-Capetown 222
Second 4F5-8 4E0 Short 10318 km



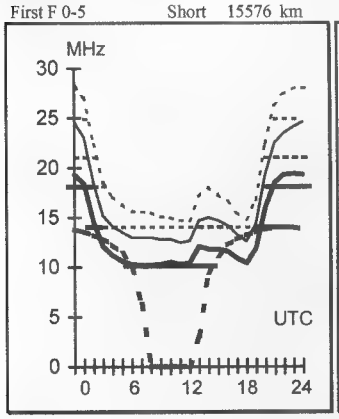
Perth-Johannesburg 248
Second 4F8-12 4E0 Short 8315 km



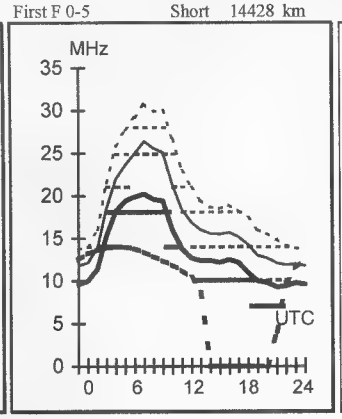
Sydney-Barbados 119
First F 0-5 Short 16155 km



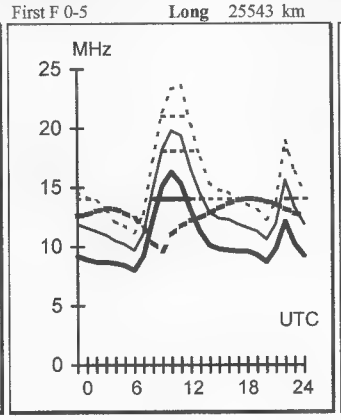
Hobart-Chicago 72
First F 0-5 Short 15576 km



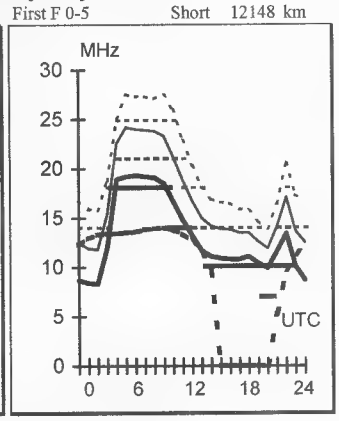
Melbourne-Moscow 316
First F 0-5 Short 14428 km



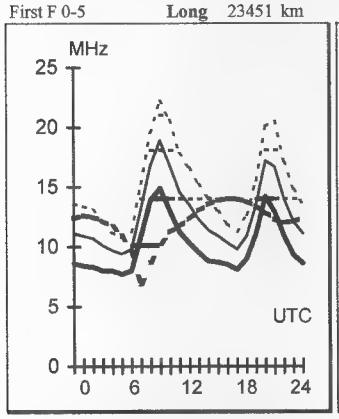
Perth-London 133
First F 0-5 Long 25543 km



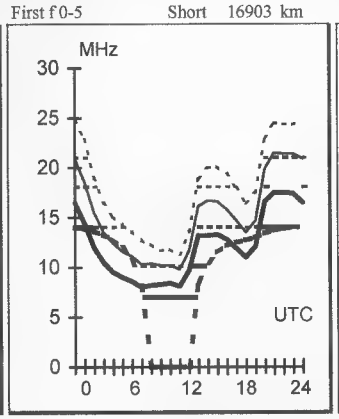
Sydney-Nairobi 255
First F 0-5 Short 12148 km



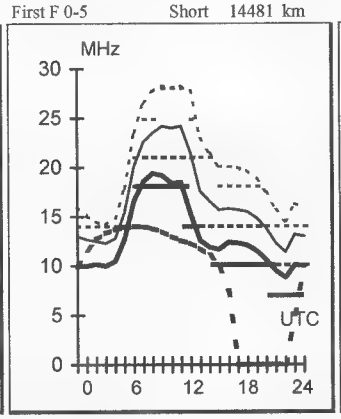
Hobart-Oslo 138
First F 0-5 Long 23451 km



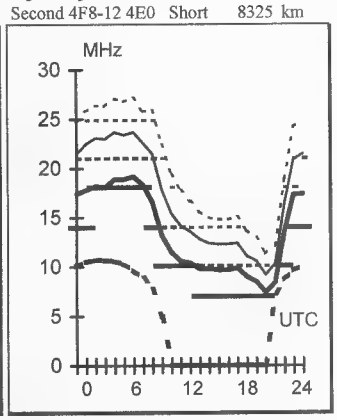
Melbourne-Quebec 60
First f 0-5 Short 16903 km



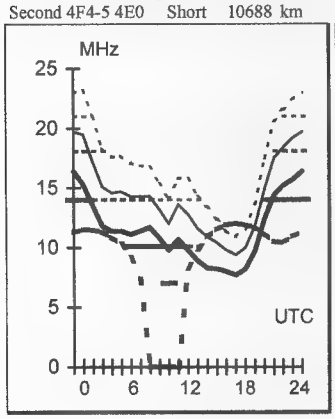
Perth-London 313
First F 0-5 Short 14481 km



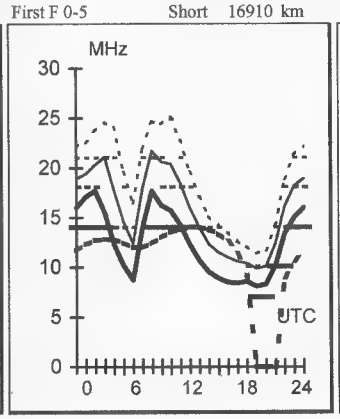
Sydney-Seoul 340
Second 4F8-12 4E0 Short 8325 km



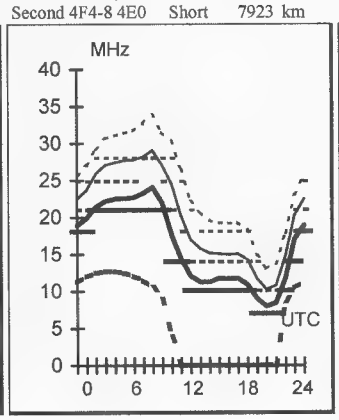
Hobart-Santiago 149
Second 4F4-5 4E0 Short 10688 km



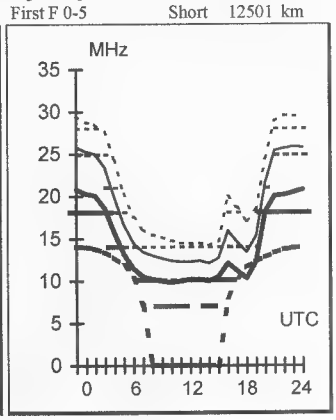
Melbourne-Senegal 219
First F 0-5 Short 16910 km



Perth-Tokyo 20
Second 4F4-8 4E0 Short 7923 km



Sydney-Vancouver 45
First F 0-5 Short 12501 km



Hamads *classifieds* FREE

FOR SALE NSW

•**3 stage tower** with base plate, 17 m in height, needs winch wire, repainted and in good condition. Cannot use because of space restrictions, $450 ono. **Cushcraft ant**, A50-3S, 6 m 3 element Yagi, brand new in box, never opened, $295 ono. **QRP PIUS**, by Index Laboratories, HF 10m to 160m, including WARC Bands, 5 watt to milliwatt levels, in-built iambic keyer plus much more. Mint condition. Never used on air only into dummy load. $950 ono, can send photos if required. **Handheld carry case** by Icom, LC-37, Brand new in wrapping, $20. **Bencher paddle**, black base, good condition, $75 ono. Mr S P Smith VK2SPS QTHR Phone 02 9456 0130, mobile 0415 559 784.

•**Yaesu FT980** 100 watt HF transceiver with books. Yaesu FC-700 antenna tuner. Kenwood DM-81 dip meter, $300. Henry Brown VK2BIA Epping, Phone 02 9869 1980, email henrybrown@optusnet.com.au

•Moved retirement village! **IC735 HF** GWO S/N 42475, box, cable, man, mic $600 ono. **FT747GX HF** GWO minor scratches S/N 8G070440 box, man, cable, mic $550 ono. **Matching FP757** heavy duty pwr supply $150. Stan VK2EL 02 4233 2783 sbourke@shoal.net.au

Lots of manuals for all sorts of radios, some quite old. Also Amateur Radio, Amateur Radio Action, QST magazines, yours for the taking. Other 'stuff' too that you may like. David VK2BDT Goulburn 02 4821 5036 QTHR

FOR SALE VIC

•**Kenwood TR7200** GII 2m $50 ono. Russ White VK3MWR 03 5941 6998

•**Philips FM 900**, with J pole aerial and coax $200. **Yaesu FT 200** and power supply, manual and notes $100. **Werner Wolfe** 5 element tribander beam, not trapped, $250 with fold over mast. Approx. 35 feet and stub tower, winch and S.S. cable $70 plus 2 metre beam. **Kantronics** packet radio communicator 3 with 2 **Compaq L.T.E.** 386s 20 laptops and software etc. $200 ono. VK3CMS email Otterburn@netspace.net.au. Phone 03 9749 2748.

•**2 ele Quad cast** alloy centre spider (commercially made) plus arms and fibreglass spreaders to build Quad for 20m (and 17/15/12/10 if required). The best of all amateur HF antennas $200. Email: vk3dbd@dodo.com.au or phone 02 6027 0570

WANTED VIC

•I am restoring an **AN/TRC24 radio system** and am looking for the following parts: **Transmitter, T-302/TRC**, power supply **PP-685/TRC**, receiver **R-417/TRC**, A band plug-in **AM-1180/GRC** and any other bits and pieces for this radio. John Eggington VK3EGG, email johne@telpacific.com.au, mobile 0409 234 672

WANTED QLD

•**Selsyn motors, 30 Magslip transmitter**. Also prop pitch motor. Ken VK4VC QTHR. Phone 07 5441 1342, email kchiverton@flexinet.com.au

•For RAAF Museum Townsville. Donation of top cover, dial pointer, and companion transmitter for **AWA C6770 receiver**, any other military communication equipment, older type (FT101B etc) transceiver in GWO for our amateur radio station VK4KG. We have an AR7 receiver and No.11 set PSU available for swap. Wayne VK4WDM QTHR melrosew@optusnet.com.au ph 07 4788 8781

•**FT 200** DEAD OR ALIVE! Looking for an FT 200 any condition Phone 07 4979 0329 or email vk4kkq@hotmail.com

•Set of **ICOM rack mounting handles**, with or without screws. Happy to pay good price. Ron VK4QM QTHR Phone 07 5488 0268, email jvette@bigpond.net.au

WANTED SA

•Enquiry for **HF radio with built-in power supply** 240V operation. At this stage please advise price and condition. M Gell VK5ZLC QTHR

•**Copy of manual and/or circuit** for the 1960s Japanese receiver HCR-62. Brought into Australia by Electronic Industries Ltd and sold under the brand name E.I.L. and by Warburton Franki selling under the SANWA name. Malcolm Haskard VK5BA QTHR, Phone/Fax 08 8280 7192, email mhaskard@chariot.net.au

FOR SALE TAS

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- Separate forms for For Sale and Wanted items. Please include name, address STD telephone number and WIA membership number if you do not use the flysheet.
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- QTHR means the address is correct in the current WIA Call Book.
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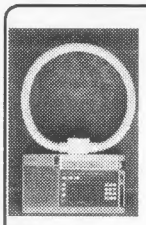

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The Wireless Institute of Australia represents the interests of all amateurs throughout Australia.

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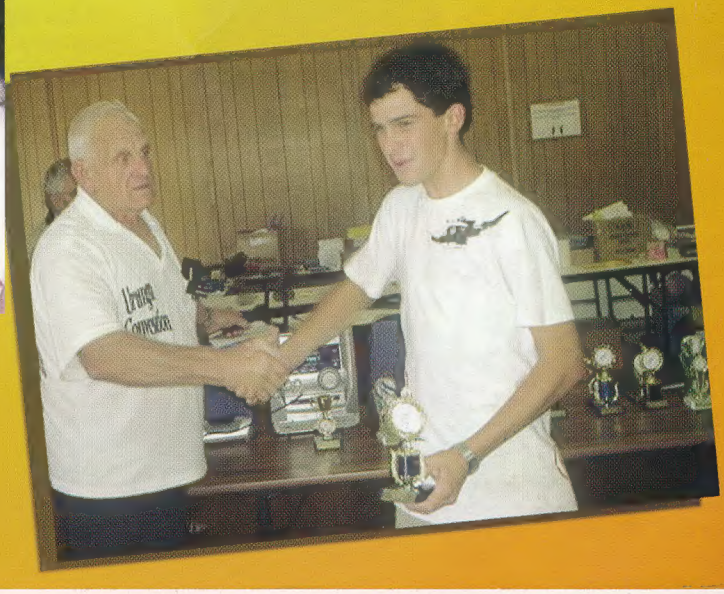
National Office	Contact	News Bulletin Schedule
10/229 Balaclava Road, Caulfield North VIC 3161, PO Box 2175 Caulfield Junction Vic 3161 Australia	Phone 03 9528 5962, Fax 03 9523 8191, 10am to 4pm daily, nationaloffice@wia.org.au http://www.wia.org.au	Subject to change. See www.wia.org.au follow National News prompts. Contact nationalnews@wia.org.au National VK1WIA news is distributed to all states.

Advisory Committees	Contact	News Bulletin Schedule
VK1 Australian Capital Territory VK1WX Alan Hawes VK1ZPL Phil Longworth VK1ET John Woolner VK1GH Gil Hughes	vk1advisory@wia.org.au	Sundays at 11.00 am VK1WIA 7.128, 146.950,438.050 Canberra Region Amateur Radio Club Email newsletter will be sent on request to president@vk1.ampr.org
VK2 New South Wales VK2QV Chris Flak VK2XCD Chris Devery VK2BFN Adrian Clout	Phone 02 9689 2417 vk2wi@ozemail.com.au vk2advisory@wia.org.au	VK2WI - Sunday 1000 and 1930 hours local.1.845; 3.595; 7.146; 10.125; 14.170; 28.320, 52.525; 145.600; 147.000; 438.525; 1273.500 megahertz. Plus regional relays. VK1WIA news included in the morning
VK3 Victoria VK3JJB John Brown VK3PC Jim Linton VK3APO Peter Mill	Phone 03 9885 9261 arv@amateurradio.com.au	VK1WIA, Sunday 11am and 8pm, 3.615 and 7.085 (LSB), 10.130 (USB), VK3RML 146.700, VK3RMM 147.250, VK3RMU 438.075.
VK4 Queensland VK4BY Don Wilchefski VK4ZZ Gavin Reibelt VK4KF Ken Fuller	Phone 07 3221 9377 vk4advisory@wia.org.au	VK1WIA, Sunday 9.0am via HF and major VHF/UHF rptrs
VK5 South Australia and Northern Territory VK5OV David Box VK5APR Peter Reichelt VK5ATQ Trevor Quick	Phone 08 8294 2992 boxesdnm@lm.net.au peter.reichelt@bigpond.com vk5advisory@wia.org.au	VK5WI: 1843 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB, 28.470 USB, 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura, 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 LSB, 7.065 LSB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'Realaudio' format from the website at www.sant.wia.org.au Broadcast Page area.
VK6 Western Australia VK6NE Neil Penfold VK6XV Roy Watkins VK6OO Bruce Hedland-Thomas	Phone 08 9351 8873 http://www.vk6.net/ vk6advisory@wia.org.au vk6ne@upnaway.com vk6xv@bigpond.net.au	VK6WIA: 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz, Country relays 3.582, 147.200 (R) Cataby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury).147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865, 3.564 and 438.525 MHz : country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz..Also in "Realaudio" format from the VK6 WIA website
VK7 Tasmania VK7ZAX Phil Corby VK7DG Dale Barnes VK7KK Reg Emmett	Phone 03 6234 3553 vk7advisory@wia.org.au phil.corby@tassie.net.au vk7dg@wia.org.au regemm@ozemail.com.au	VK1WIA Sunday 9am on VK7WI network: 3.570MHz LSB, 146.700 MHz FM (VK7RHT South), 53.825MHZ FM (VK7RAD South), 147.000MHz FM (VK7RAA North), 146.750 FM & 53.825MHz (VK7RNW North West), 146.625 MHz FM (VK7RMD North West), UHF CB Channel 15 (Hobart) and 27MHz CB - 27.225MHz LSB (Hobart). Followed at 9:30am with VK7 Regional News Broadcast also on 7.090MHz LSB & 14.130MHz USB

Notes

1. Only three members of the state advisory committees are listed.
2. All listings are preliminary. They will be updated each month as required.
3. Membership application forms are available from the WIA web site www.wia.org.au or the national office address above.

Urunga!



Photos from the 2005 Urunga Convention. Held on the Easter weekend each year just south of Coffs Harbour, the Convention has fox-hunting as a major focus. Find further details at the Convention website at: http://users.tpg.com.au/goldy2/

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